

No. 60018

# **JVC** Service Manual

3-CCD COLOR VIDEO CAMERA

3-CCD-FARBVIDEO KAMERA

CAMERA VIDEO COULEUR A TROIS CCD

**MODEL**  
**MODELL**  
**MODÈLE** **KY-25/KY-R25**  
(with KA-20)

**VICTOR COMPANY OF JAPAN, LIMITED**




# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## ● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the  symbol and shaded ( ) parts are critical for safety.

Replace only with specified part numbers.

**Note:** Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.  
Caution for continued protection against fire hazard.  
Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:

- 1) Wires covered with PVC tubing
- 2) Double insulated wires
- 3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:

- |                    |                                      |            |
|--------------------|--------------------------------------|------------|
| 1) Insulation Tape | 3) Spacers                           | 5) Barrier |
| 2) PVC tubing      | 4) Insulation sheets for transistors |            |

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

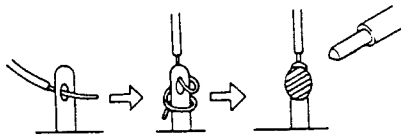


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

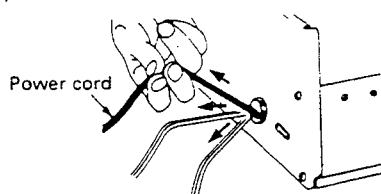


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)

In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector

In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

1) **Connector part number :** E03830-001

2) **Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.

3) **Replacement procedure**

(1) Remove the old connector by cutting the wires at a point close to the connector.

Important : Do not reuse a connector (discard it).

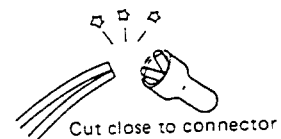


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

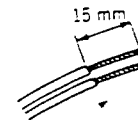


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

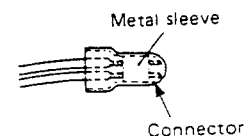


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

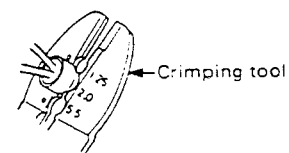


Fig. 6

(5) Check the four points noted in Fig. 7.

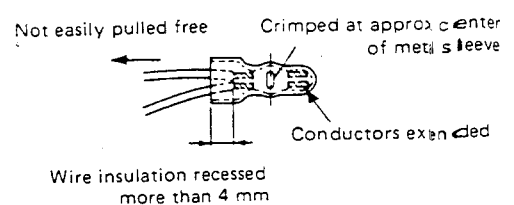


Fig. 7



## ● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

### 1. Insulation resistance test

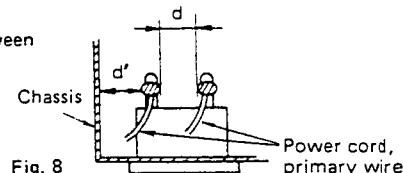
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

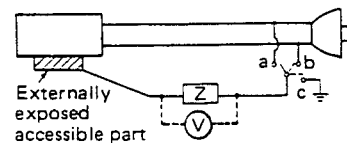


### 4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

**Measuring Method: (Power ON)**

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

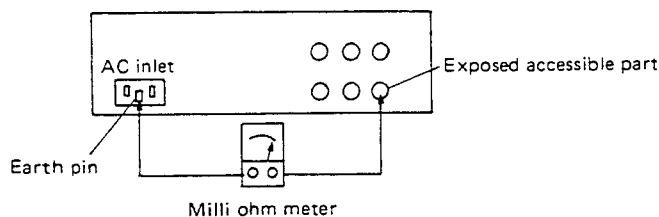


### 5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

**Measuring Method:**

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.



Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega / 500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V 200 to 240 V	Europe & Australia	$R \geq 10 \text{ M}\Omega / 500 \text{ V DC}$	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	$d \geq 4 \text{ mm}$ $d' \geq 8 \text{ mm}$ (Power cord) $d' \geq 6 \text{ mm}$ (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	$1 \text{ k}\Omega$	$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada	$0.15 \mu\text{F}$ in series with $1.5 \text{ k}\Omega$	$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	$2 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
		$50 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Other terminals

Table 2 Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.



# JVC | Instructions

## 3-CCD COLOR VIDEO CAMERA **KY-25 SERIES** (NTSC/PAL)

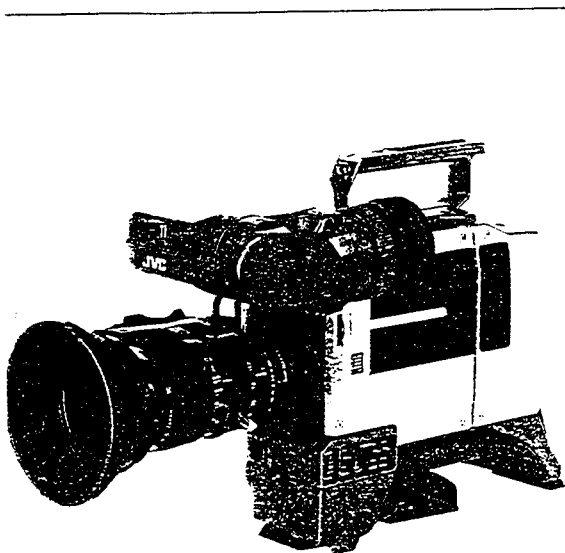


Photo shows the KY-25 video camera.

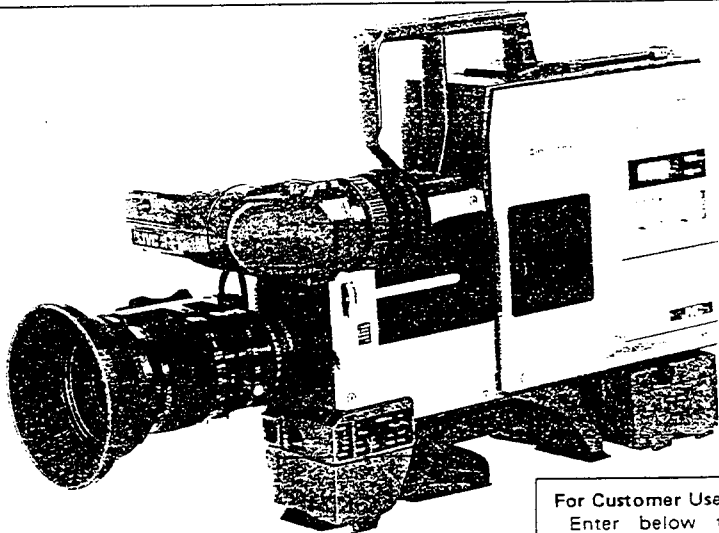


Photo shows the KY-R25 video camera  
with an optional recorder (BR-S410),  
and lens (HZ-516B).

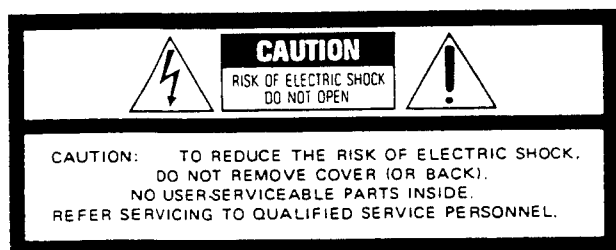
**For Customer Use:**

Enter below the Serial No.  
which is located on the top  
frame. Retain this information  
for future reference.

Model No. KY-25/-H2, KY-R25

Serial No. \_\_\_\_\_





The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Due to design modifications, data given in this instruction book are subject to possible change without prior notice.

**WARNING:**  
TO PREVENT FIRE OR SHOCK  
HAZARD, DO NOT EXPOSE THIS  
UNIT TO RAIN OR MOISTURE.

**AVERTISSEMENT:**  
POUR EVITER LES RISQUES  
D'INCENDIE OU D'ELECTROCUTION,  
NE PAS EXPOSER L'APPAREIL A  
L'HUMIDITE OU A LA PLUIE.

#### POWER SYSTEM

This color video camera should be used with 12 V DC only.

#### CAUTION:

To prevent electric shocks and fire hazards, do NOT use other than specified power source.

#### Système d'alimentation

Cette caméra vidéo couleur ne doit être utilisée que sur tension continue de 12 V.

#### Attention:

Pour éviter tout risque d'incendie ou d'électrocution, n'utilisez aucune autre source d'alimentation.

#### Information for Canada

This product complies with D.O.C limits (C.R.C., C.1374) pertaining to class B digital apparatus.

#### Renseignements pour Canada

Ce produit est conforme aux normes du M.D.C. (C.R.C., ch.1374) s'appliquant aux appareils numériques de classe B.

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## NOTES

### (1) KY-25/-H25

- The carrying handle KA-232 provided as an accessory is used when combined with the camcorder VTR BR-S410.

For installation, refer to page 20 of the KY-R25 Instruction.

- At this time, the camera adapter KA-20 needs to be removed. Refer to page 34.

### (2) KY-R25

- If you wish to connect the VTR using the VTR cable, the camera adapter KA-20 and carrying handle KA-231 are necessary.

For installation, refer to page 34.

For handling, refer to the relevant descriptions in the KY-25/-H25 Instruction.



# IMPORTANT SAFEGUARDS

1. Read all of these instructions.
2. Save these instructions for later use.
3. Unplug this appliance system from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use attachments not recommended by the appliance manufacturer as they may cause hazards.
5. Do not use this appliance near water — for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
6. Do not place this appliance on an unstable cart, stand, or table. The appliance may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the appliance. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.

PORTABLE CART WARNING  
(symbol provided by RETAC)



S3126A

An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

7. Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to insure reliable operation of the appliance and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the appliance on a bed, sofa, rug, or other similar surface. This appliance should never be placed near or over a radiator or heat register. This appliance should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.
8. This appliance should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company. For appliance designed to operate from battery power, refer to the operating instructions.
9. This appliance system is equipped with a 3-wire grounding type plug (a plug having a third (grounding) pin). This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding plug.
10. Do not allow anything to rest on the power cord. Do not locate this appliance where the cord will be abused by persons walking on it.
11. Follow all warnings and instructions marked on the appliance.
12. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
13. Never push objects of any kind into this appliance through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the appliance.
14. Do not attempt to service this appliance yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
15. Unplug this appliance from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - a. When the power cord or plug is damaged or frayed.
  - b. If liquid has been spilled into the appliance.
  - c. If the appliance has been exposed to rain or water.
  - d. If the appliance does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the appliance to normal operation.
  - e. If the appliance has been dropped or the cabinet has been damaged.
  - f. When the appliance exhibits a distinct change in performance — this indicates a need for service.
16. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
17. Upon completion of any service or repairs to this appliance, ask the service technician to perform routine safety checks to determine that the appliance is in safe operating condition.



# **KY-25/-H25 Instruction**



Thank you for purchasing the JVC KY-25/-H25 Color Video Camera. This video camera is a compact, sturdy unit designed especially for portability making it suitable for a wide range of applications in the field and in the studio. Productions can be shot in a variety of situations by using this camera in combination with a portable VTR.

To gain maximum benefit from the camera, it is suggested that you study this booklet carefully. After reading, retain it for future reference.

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## FEATURES

- **Excellent picture reproduction with 3 interline transfer CCD chips.**
  - Compact design, lighter weight and less power consumption than conventional tube cameras.
  - Low lag and a high resistance to image burn-in with no deflection distortion.
  - High sensitivity and S/N attribute to the excellent performance in low light situations.
  - Excellent resistance to vibration and impact.
  - Virtually no misregistration from terrestrial magnetism.
  - 530 lines of horizontal resolution is attributed to a high-precision F1.4 prism, coupled with 360,000 (U-Version)/430,000 (E-Version) pixel CCD's for each of the Red, Green and Blue channels. Due to the use of half pitch spatial offset, a Y-channel typical horizontal resolution of 700 can be obtained.
  - RGB use is possible with the optional RM-P200 remote control unit for computer graphics and other RGB applications.
- **Component, Composite and Y/C Outputs**  
With these three outputs the KY-25/-H25 can meet a variety of VTR configurations with different VTR cables; Y, R-Y, B-Y for MII, Y/C for S-VHS or Composite for standard use.
- **Built-in Electronic Shutter**  
By employing the use of a variable electronic shutter, blurred images are a thing of the past. Shutter speeds of 1/250th, 1/500th and 1/1000th are now possible, in addition to the 1/60th (U-Version)/1/50th (E-Version) standard. This allows for clear visibility, of fast moving objects, during slow-motion analysis.
- **Character display of operation**  
On the screen of the viewfinder, VF-P10, camera operating conditions are indicated by logical character displays.
- **Microcomputer-controlled automatic set-ups**  
Auto White, Black and Iris functions are controlled by a microcomputer for exact balancing and level adjustments. This one-touch process results in quality pictures with optimum levels under any conditions.
- **Comprehensive functions**
  - Standard 2H contour correction is provided.
  - 3 Settings for white balancing.  
Two memory positions are available and a 3200K preset for emergencies, whether you are indoors or out. (Depends on filter wheel settings)
  - Negative and positive signal output is possible for film transfer applications.
  - Color-Matrixing for exact camera matching.
- **Meeting studio camera requirements**  
Using the optional remote control unit RM-P200, extension up to a maximum of 100 m (325 ft) is possible. From the RM-P200, the composite and RGB signals (Y/C signals or Y/R-Y/B-Y (for MII) signals can be selected using an internal select switch) can be obtained.



## PRECAUTIONS

### Safety Precautions

- Use only the optional DC-C11/NB-G1 (with BH-P20) Battery Pack or the optional **\*AA-P200**/AA-P250 AC Power Adapter. (\*AA-P200: U-Version only)
- Do not modify the unit or operate it without cover panel to prevent danger.
- When there is any abnormality (abnormal noise, smell, smoke, etc.) with the unit, immediately turn the power off and contact your nearest JVC-authorized service agent.
- Do not damage or fray the power cord. Otherwise, this will cause leakage or electrical shock.
- If the camera is not going to be used for an extended period of time, leave the power cord disconnected for reasons of safety.
- If there is a danger of being struck by lightning during outdoor shooting, evacuate to a safe place immediately.

### Handling Precautions

- **Supply voltage**  
Make sure that the power is between 10.5 V and 15 V DC. If the power voltage is too low, abnormal color and increased noise could occur. Do not exceed 15 V DC in any case, or the unit could be damaged.
- **Connecting to a portable VTR**  
Different VTRs require different start/stop triggering modes and connection cables. Before connection, carefully read "Connection to Video Recorder" on page 10.
- **Ambient temperature**  
Do not operate the camera outside a  $-5^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$  ( $23^{\circ}\text{F}$  to  $113^{\circ}\text{F}$ ) temperature range. Refer to the corresponding item in the "Specifications" on page 18.
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorrect.
- When a wireless microphone or wireless microphone tuner is used near the camera, the tuner could pick up noise. In such a case, select another channel.

## STANDARD CONFIGURATION

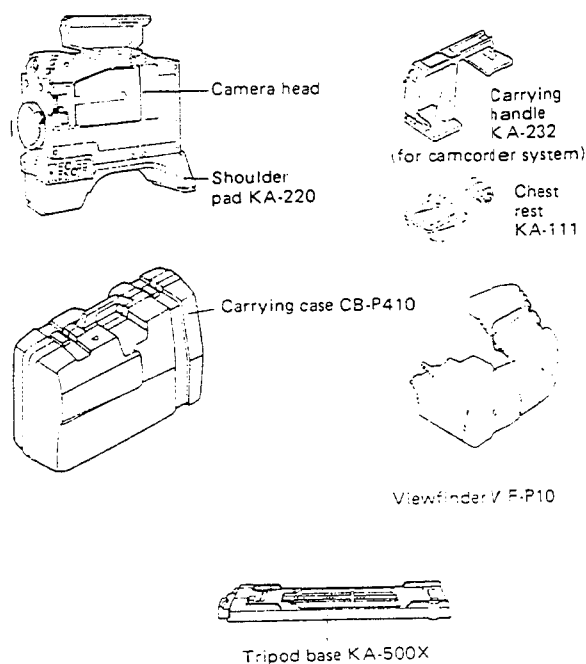
The KY-25 is designed as a field work camera such as for ENG/EP and the KY-H25 is prepared as an input camera for image processing, etc.

The camera head of the KY-25 and KY-H25 is the same; the only differences are listed below. For this reason, camera operation itself is the same for the two cameras.

Other differences are as given in the table below.

Model name	KY-25	KY-H25
Configuration		
Camera head	○	○
Shoulder pad (KA-220)	○	X
Viewfinder (VF-P10)	○	X
Tripod base (KA-500X)	○	X
Carrying case (CB-P410)	○	X
Carrying handle (KA-232)	○	X
Chest rest (KA-111)	○	X

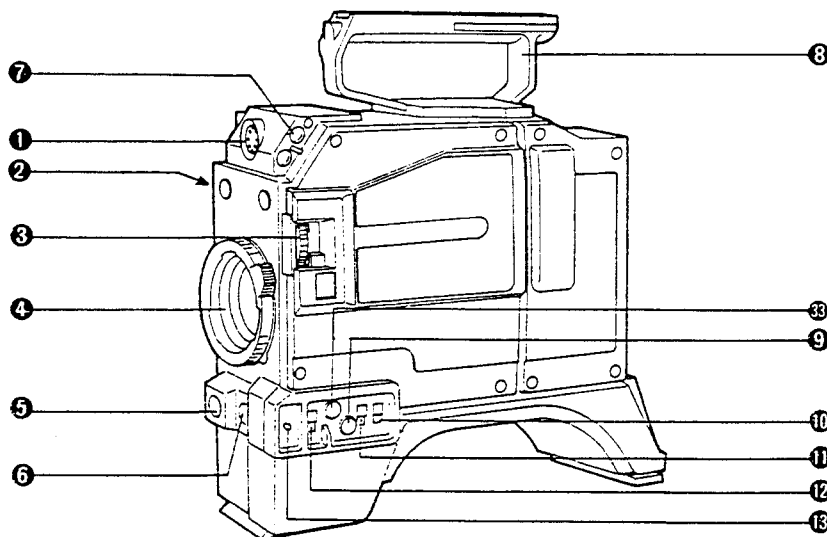
○: Provided X: Not provided





# CONTROLS, CONNECTORS AND INDICATORS

## Camera Head



### ① Viewfinder connector (VF)

Connector for a exclusive viewfinder (VF-P10).

### ② Lens connector (LENS)

Connect the cable from the standard lens.

### ③ Filter turret

The turret for the Neutral Density and color temperature conversion filters is provided with four positions.

- 1) CLOSE: Same condition as lens being capped.
- 2) 3200K: For shooting indoors or outdoors with insufficient light.
- 3) 5600K: For shooting outdoors.
- 4) 5600K ND: The 12.5 % ND filter and 5600K color filter are combined for shooting outdoors in direct sunlight or on a bright day.

### ④ Lens mount ring

### ⑤ Auto setup button (AUTO SETUP)

Press this button to adjust the setup (black/white balance) or the white balance automatically and save the state in memory. When the button is pressed once, the white balance is adjusted; when depressed continuously for longer than one second, the setup is adjusted.

Before pressing this button, set white balance mode switch ⑩ to the AUTO 1 or AUTO 2 (whichever you want to save) position.

### ⑥ Video recorder start switch (VTR)

For start/stop triggering of the VTR.

### ⑦ Shutter speed select button and indicator lamp (SHUTTER)

This button permits speed selection of the electronic shutter. This is effective when shooting fast-moving subjects.

250 500 1000

Every time this button is pressed, the shutter speed will change to 1/250, 1/500 and 1/1000 in this order (cyclic operation). At this time, the indicator lamp comes on.

SHUTTER

NORMAL

If this button is pressed, the shutter speed will become \*1/60. (\*E-Version: 1/50) Normally use in this state. The indicator lamp goes out.

### ⑧ Carrying handle (KA-231)

### ⑨ Display select button (DISP SELECT)

This camera has a function to display the setting conditions of various control switches and settings in the viewfinder screen. There are two display screens; every time this button is pressed, the display will change from "no indication" to "screen 1" to "screen 2" sequentially.

### ⑩ White balance mode switch (W. BAL)

This switch permits mode selection of white balance.

AUTO 1: Set to either position when activating the auto and setup or auto white balance function. This camera AUTO 2 has two auto white memory circuits and this switch serves as its select switch.

PRESET: For using in the preset (3200K) state or 5600K with change of filter wheel.

### ⑪ Camera/color bar select switch (MODE)

CAM: Outputs the video signal from the camera to the video output.

BARS: Outputs the color bar signal to the video output.

NEGA: Outputs the negative video signal from the camera to the video output.

### ⑫ Sensitivity select switch (HI-SENS)

For use in low light conditions, the camera sensitivity gain can be boosted by +9 dB or +18 dB. Normal operation is "0 dB".

### ⑬ Operation switch (CAMERA/VTR)

3-step select switch. Selects "ON", "OFF" of the camera power and VTR power-save mode\*.

\* This may not be possible with some VTRs.

### ⑭ Camera cable select switch (MODE)

Select according to the application of camera cable connector ②.

VTR: Set to this position when connecting to a portable VTR with a composite signal input or component signal input (Y, R-Y, B-Y).

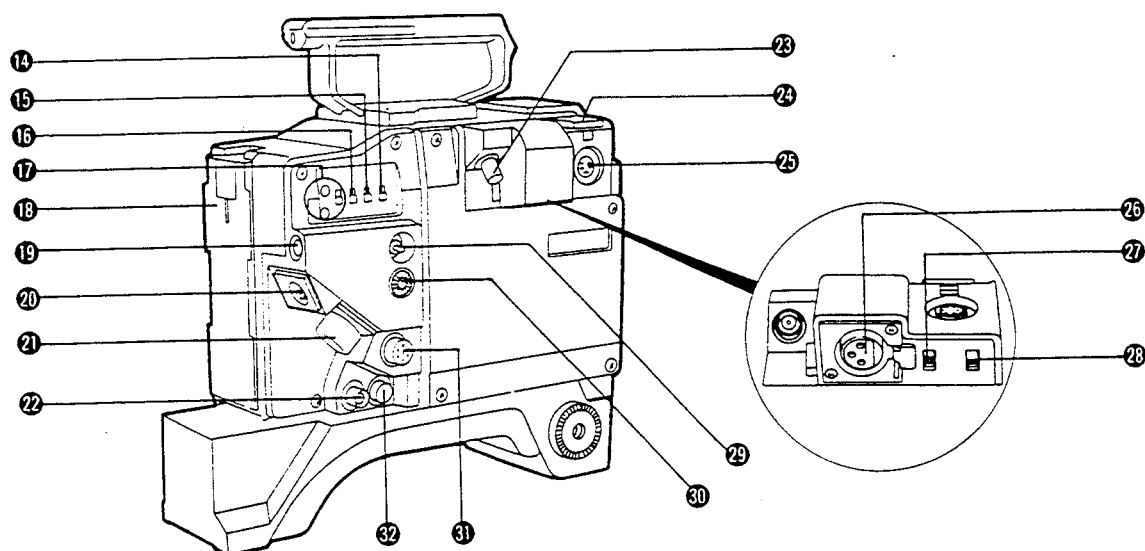
Y/C 358: Set to this position when connecting to a VTR (Y/C 443) with separate Y/C signal inputs (S-VHS recorder).

RM: Set to this position when connecting a remote control unit (RM-P200)

### ⑮ VTR triggering mode select switch (VTR)

Set according to the start/stop triggering mode of the VTR connected.





Switch position	VTR connector	VTR trigger
L	10-pin	Ground start
H	10-pin	4 V start
B	14-pin	4 V start

**16 Mic output level select switch (AUDIO LEVEL)**

Selects the microphone (audio) output level through camera cable connector 21.

H: Outputs at an approximate level of -20 dB.

L: Outputs at microphone own level.

**17 Phase adjustment control (PHASE)**

Adjusts the phase of the video signal output from the camera with respect to the external reference signal when genlocking to other video sources.

H: For adjustment of H phase.

SC: Coarse; For coarse adjustment of SC phase in three steps, 0°-120°-240°.

Fine: For fine, continuous adjustment of SC phase.

**18 Battery Guide**

Guide for battery pack (DC-C11 optional). This is also used as a holder when the AC power adapter **\*AA-P200** (optional) or battery holder BH-P20 (optional, for the exclusive battery NB-G1) is used. (\*AA-P20: U-Version only)

**19 Earphone jack (EARPHONE)**

When the video recorder used has a return audio signal line, this jack makes it possible to monitor the audio signal during recording or playback.

**20 DC 12 V IN connector (DC INPUT)**

Use this 4-pin Cannon XLR connector for supplying 12 V DC from the optional AA-P250 or **\*AA-P200** AC power adapter. (\*U-Version only)

Pin No.	Function
1	GND
2	
3	
4	-12 V

**21 Camera cable connector (VTR/RM)**

Connector for connecting the cable from the recorder, etc. selected by switch 14.

**22 GENLOCK signal input connector (GENLOCK IN)**

Input connector for a composite video or black burst external reference signal. This allows synchronization with other video devices.

**23 Test output connector (TEST OUTPUT)**

The signal selected by the internal "PIX SELECT" switch is output here. Either composite video signal (VBS), or B, G, R signals can be selected as an output. This is factory-preset to the composite video signal (VBS) output.

**24 Exclusive microphone mounting shoe**

Shoe for mounting the exclusive microphone M-K50 (monaural type) or MV-P602 (stereo type).

**25 Exclusive microphone input socket (MIC INPUT)**

Input socket for the exclusive microphone.

**26 Mic input socket (MIC INPUT)**

Input socket for the microphone with a 3-pin XLR connector. The input is parallel with MIC connector 25.

**27 Mic output select switch (MIC MODE)**

This switch must be set to "MONO" position.

**28 VF AUX video select switch (RET)**

When the VTR is set to the playback mode with the 14-pin type VTR connected to camera cable connector 21, if this switch is set to ON, the playback picture can be monitored in the viewfinder. This serves the same function as the RET switch on the lens.

**29 Power select switch (POWER)**

Permits power on/off and selection of power supplies.

RM/VTR: Set to this position when power is fed from the remote control unit (RM-P200) or portable VTR through the camera cable.

OFF: The power to the camera will be completely set to OFF.

DC INPUT/: Set to this position when the AC power adapter (**\*AA-P200** or AA-P250)/4-pin XLR or the battery pack (DC-C11 or NB-G1) is used. (\*AA-P200: U-Version only)

**30 Intercom level (INTERCOM LEVEL)**

Can control the volume level of the camera's intercom headphone.

**31 Y/C 358 (U-Version)/443 (E-Version) output connector**

Y/C signals are output when camera cable select switch 14 is set to "Y/C 358 (443)". A unit with a 7-pin connector input (S-VHS VTR, etc.) can be connected here

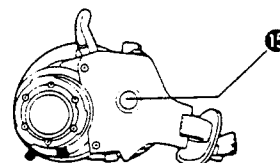
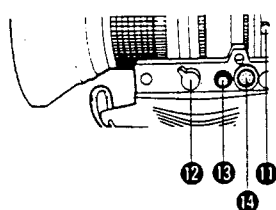
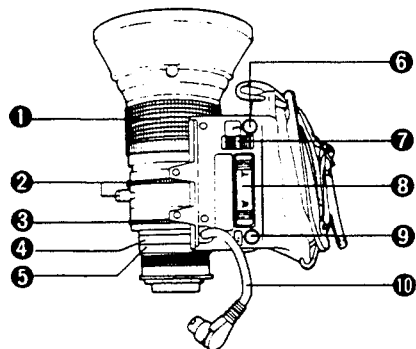
**32 Intercom jack (INTERCOM)**

**33 Zebra button (ZEBRA)**

Switches the zebra pattern video level indicator on the viewfinder ON/OFF.



## Zoom Lens (HZ-516B, optional)



### 1 Focus ring

Focus adjustment ring.

### 2 Zoom lever/zoom ring

Ring and lever for manual zooming.

### 3 Iris ring

When the iris mode switch 7 is set to "M" (manual), the iris can be opened and closed manually using this ring. When it is set to "A", the iris is adjusted automatically.

### 4 Back focus ring

For the back focus adjustment, turn this ring.

### 5 Macro ring

If the ring is turned fully in the direction of the arrow, macro shooting at a distance of about 9 cm from the subject will be possible.

### 6 Momentary iris switch

Even during the manual iris operation with the iris mode switch set to "M" (manual), iris control can be automatic as long as this button is kept depressed.

### 7 Iris mode switch

A: For auto iris operation and remote operation (with RM-P200).

M: For manual iris operation.

R: This position cannot be used.

### 8 Zoom servo lever

The speed and direction of the servo zooming is controlled by this see-saw switch.

### 9 Return switch (RET)

The return video signal from the VTR can be monitored in the viewfinder while this switch is depressed.

### 10 Lens cable

Connect the lens connector on the camera head.

### 11 Securing knob

For fixing back focus ring 4.

### 12 Zoom mode knob (ZOOM)

S: For power zooming.

M: For manual zooming.

### 13 Focus servo connector

For connecting the optional focus servo unit.

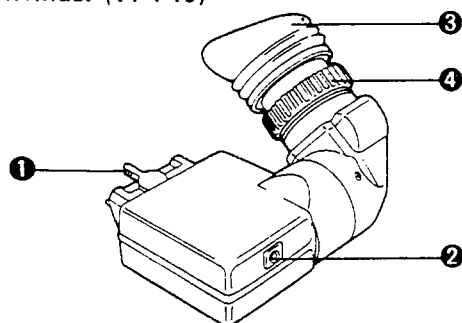
### 14 Zoom servo connector

For connecting the optional zoom servo unit.

### 15 VTR switch (VTR)

For the start/stop operation of the VTR.

## Viewfinder (VF-P10)



### 1 Slide lock lever

After the viewfinder has been attached to the camera, the viewfinder can be slid to the left and right (by 40 mm) if this lever is loosened.

### 2 Tally lamp

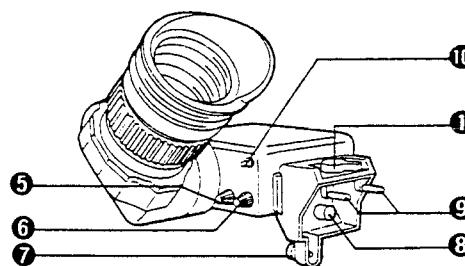
When the camera is used connected to a portable VTR, this LED comes on to indicate the recording mode. To switch it off, set switch 10 to OFF.

### 3 Eyepiece

Focusing adjustment is possible.

### 4 Eyepiece fixing ring

Loosen and adjust the eyepiece back and forth to match your vision.



### 5 Contrast control (CONT)

### 6 Brightness control (BRIGHT)

### 7 Lock screw

Use to lock the viewfinder onto the camera.

### 8 VF connector

Directly connected to the video camera.

### 9 Viewfinder fixing pins

Insertion pins for use in attaching to the video camera.

### 10 Tally switch (TALLY)

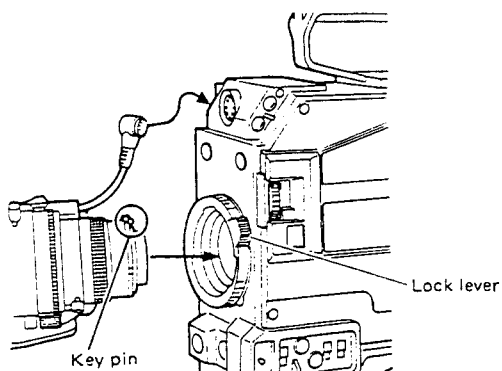
Turns the top tally lamp 2 off even when the camera (VTR) is recording. The REC indicator inside the viewfinder will be kept ON.



# INSTALLATION

## Lens Installation (Optional HZ-516B)

- 1 Be careful of the key pin of the lens and slot of the mount ring groove, then insert the lens flange into the mount groove firmly.
- 2 Turn the lock lever clockwise to fix the lens.
- 3 Connect the lens cable to the camera head.

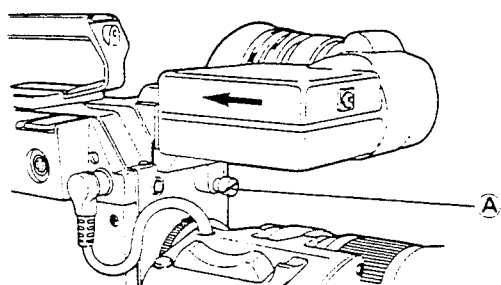


### Note:

Make sure that the lens is firmly attached. Otherwise, the back focus adjustment may be incorrect.

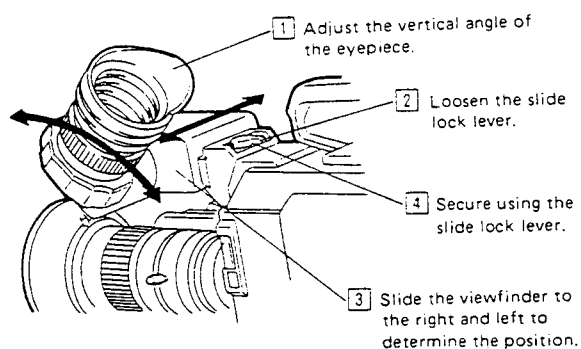
## Viewfinder Installation (VF-P10)

- 1 Mate the viewfinder fixing pin with the mounting hole of the camera head, then insert.
- 2 Insert it all the way, then confirm that the viewfinder has been positively connected and turn viewfinder fixing screw Ⓐ clockwise to lock it.

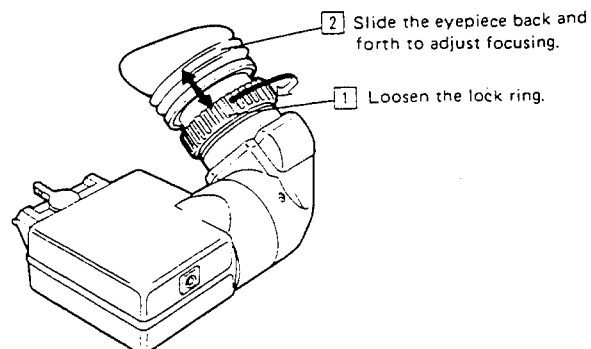


### • Eyepiece adjustment

- Vertical angle and left/right slide adjustment



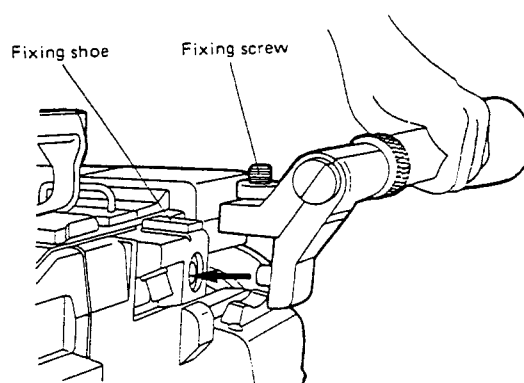
### • Focusing adjustment



## Microphone Installation

### Exclusive microphone (M-K50 or MV-P602, optional)

- 1 Insert the microphone into the mic holder fixing shoe on the right top of the camera.
- 2 Secure the microphone using the fixing screw.



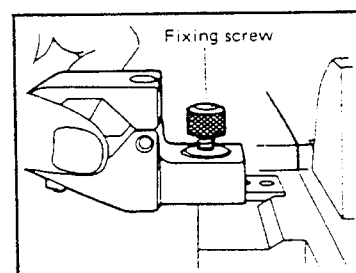
### Note:

- Lens motor noise or mechanical friction noise may be picked up by the microphone and recorded. Check possible noise conditions in advance.

### Ordinary microphone

Install the microphone onto the camera head using the optional mic holder (Part No. SCUA30312, service parts).

- 1 Insert the mic holder into the mic holder fixing shoe on the right top of the camera, then fix it using the fixing screw.



- 2 Connect the microphone output to the MIC connector on the camera head.

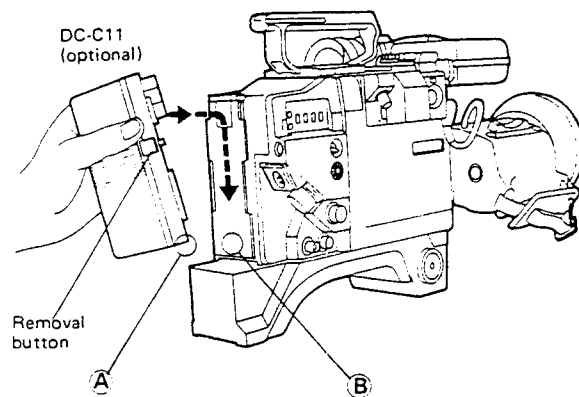


### Battery Pack (DC-C11, optional) Installation

- 1 Press battery pack guide **A** onto **B** on the battery guide, then press it firmly to the camera using **B** as the reference. Match the battery pack guide with the battery guide, then press it down until it is locked.
- 2 To remove the battery pack, slide the removal button towards you, then move the battery pack upward.

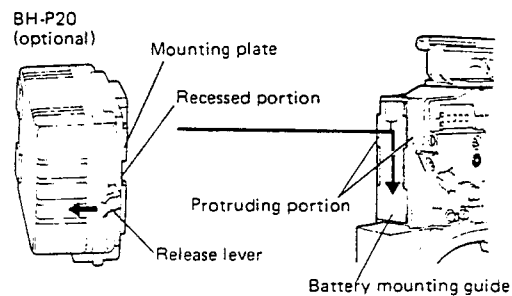
#### • Battery pack

- With a fully-charged DC-C11 battery pack, the camera will operate for approx. 70 minutes at normal temperatures (about 25°C (77°F)).
- Be sure to charge the battery pack before recording. It is also recommended to have some spare charged battery packs ready.
- Replace the battery pack when the BATT indicator in the viewfinder starts flickering.
- Use the optional AA-P250 AC power adapter to charge the battery pack. For the charging procedure, refer to the AA-P250's instruction manual.



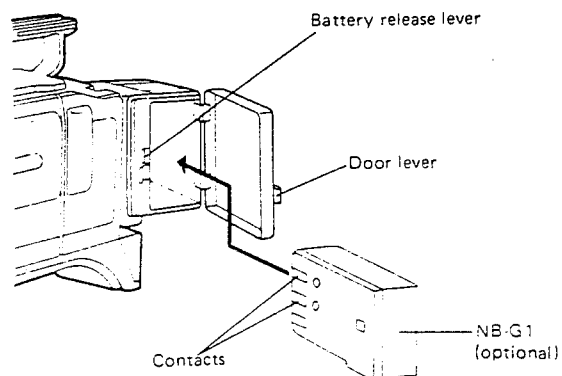
### Battery Holder (BH-P20, optional) Installation

- 1 Aligning the recessed portion of the mounting plate of the BH-P20 with the protruding portion of the battery mounting guide on the back of the camera. Push the BH-P20 down until it locks.
- 2 To remove the BH-P20, push the release lever, slide the BH-P20 up.



### Inserting the NB-G1 battery pack (optional)

1. Open the compartment door by pushing the door lever away from the BH-P20.
  2. Insert the NB-G1 battery pack with its contacts facing the camera, as illustrated. When properly inserted, the battery pack will automatically be locked by the battery release lever.
- To remove the battery pack, push the battery release lever away from the BH-P20; the battery pack will be unlocked so it can be removed.



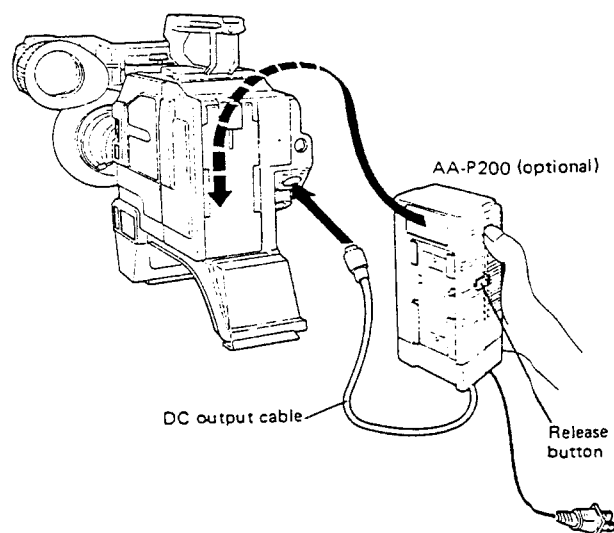


### AC Power Adapter **AA-P200** (optional) Installation

- AA-P200: U-Version only

This describes mounting method when the AC power adapter AA-P200 is used which can be directly mounted onto the KY-25/KY-H25.

- 1 As shown, insert the power adapter into the battery guide on the back of the camera head from above, then press it down.
- 2 Connect the AA-P200 DC output cable to the DC IN connector on the camera head.
- To remove the power adapter, pull it upward while pressing the release button.



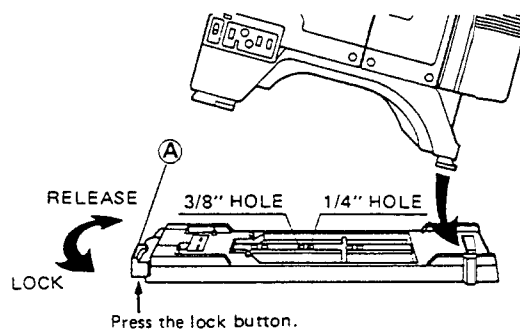
### Tripod Installation

In the case of the KY-25 (using the KA-500X tripod base)

- 1 Use either the 1/4" or 3/8" holes to match the tripod used, select the front, middle or rear holes of the camera for maximum balance, and taking its center of gravity into consideration.
- 2 While pressing the lock button, set lock lever **A** to its released position (turn it clockwise).
- 3 After engaging the notch on the rear of the camera with that of the tripod base, place the camera on the tripod base.
- 4 While pressing the lock button, set lock lever **A** to its locked position by turning it to secure the camera.

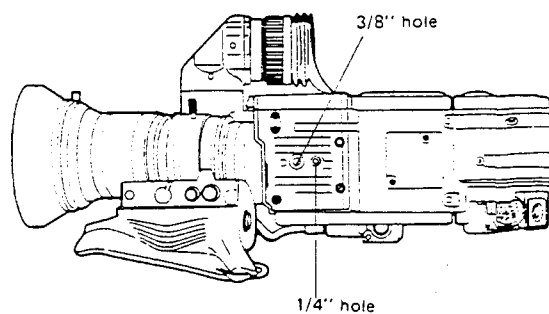
#### Caution:

When rotating the lock lever, turn it while holding the camera's handle with one hand. Turn the lever slowly to prevent the camera from dropping off the tripod.



### In the case of the KY-H25

As shown on the right, the 1/4" and 3/8" holes are provided on the bottom of the KY-H25. Use these in accordance with the tripod used.





## POWER SOURCES

There are four methods of powering the KY-25 and KY-H25 as described below.

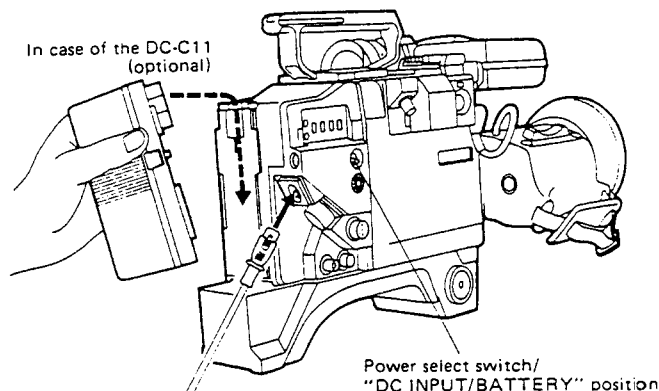
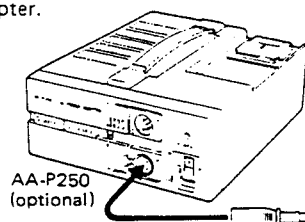
- (1) Power from the battery pack (DC-C11 or NB-G1) or AC power adapter (\*AA-P200). (\*U-Version only)
- (2) Power from the AC power adapter (AA-P250).
- (3) Power from a portable VTR.
- (4) Power from the remote control unit (RM-P200).

### Power from the DC-C11/NB-G1 (battery pack) or \*AA-P200 (AC adapter) (AA-P200: U-Version only)

- 1 Install the DC-C11, NB-G1 or \*AA-P200 to be used to the KY-25/KY-H25. (Refer to the installation method on pages 7 and 8.)
- 2 If the power select switch on the camera head is set to the "DC INPUT/BATTERY" position, power is fed to the camera head.

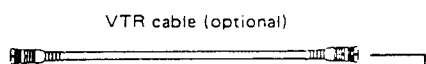
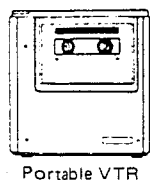
### Power from the AA-P250 (AC power adapter)

- 1 Connect the KY-25/KY-H25 to the AA-P250 using the power cable supplied with the adapter.
- 2 If the power select switch on the camera head is set to the "DC INPUT / BATTERY" position, power is fed to the camera head.



### Power from a portable VTR

- 1 Connect the camera to the VTR using a VTR cable which matches the VTR used. (Refer to page 10.)
- 2 When a VTR with a composite or component (Y, B-Y, R-Y) input is used, set the camera cable select switch on the camera head to the "VTR" position. When an S-VHS VTR is connected, set the switch to the "Y/C 358 (Y/C 443) position.
- 3 When the power select switch on the camera is set to the "RM/VTR" position, power is fed to the camera head.



#### Caution:

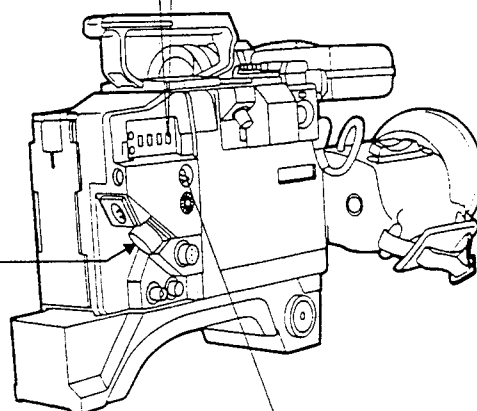
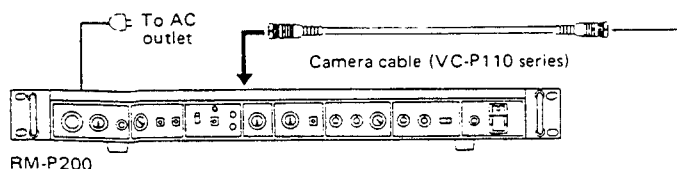
If the camera is operated from the battery in the portable VTR, the battery operation time could be very short due to the small capacity of the battery. The power supply to the camera should not exceed the rated current capacity of the VTR.

Camera cable select switch:

- Set to the "VTR" or "Y/C 358 (443)" position for the correct VTR being used.
- Set to the "RM" position when power is fed from the RM-P200.

### Power from the RM-P200 (remote control unit)

- 1 Using the remote control cable (VC-P110 series), connect the camera head to the RM-P200.
- 2 Set the camera cable select switch to the "RM" position.
- 3 When the power select switch on the camera is set to the "RM/VTR" position, power is fed to the camera head.

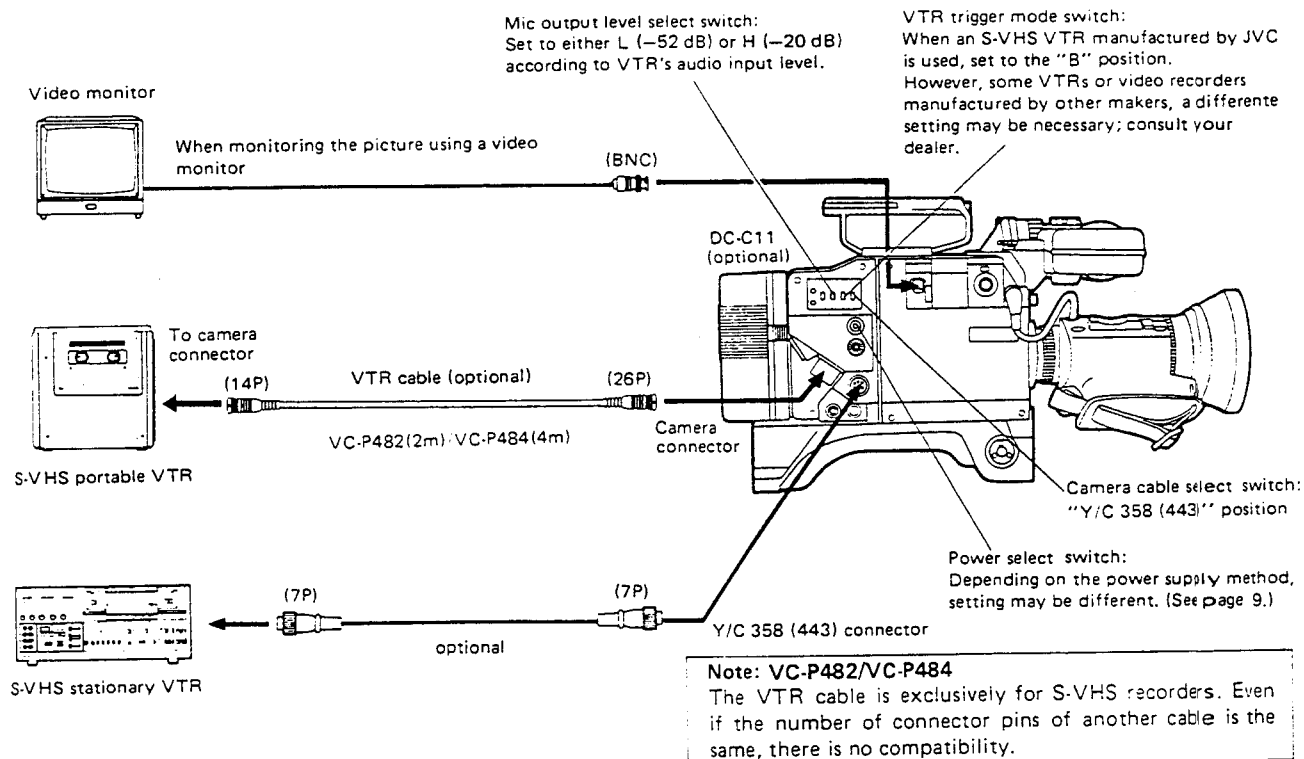




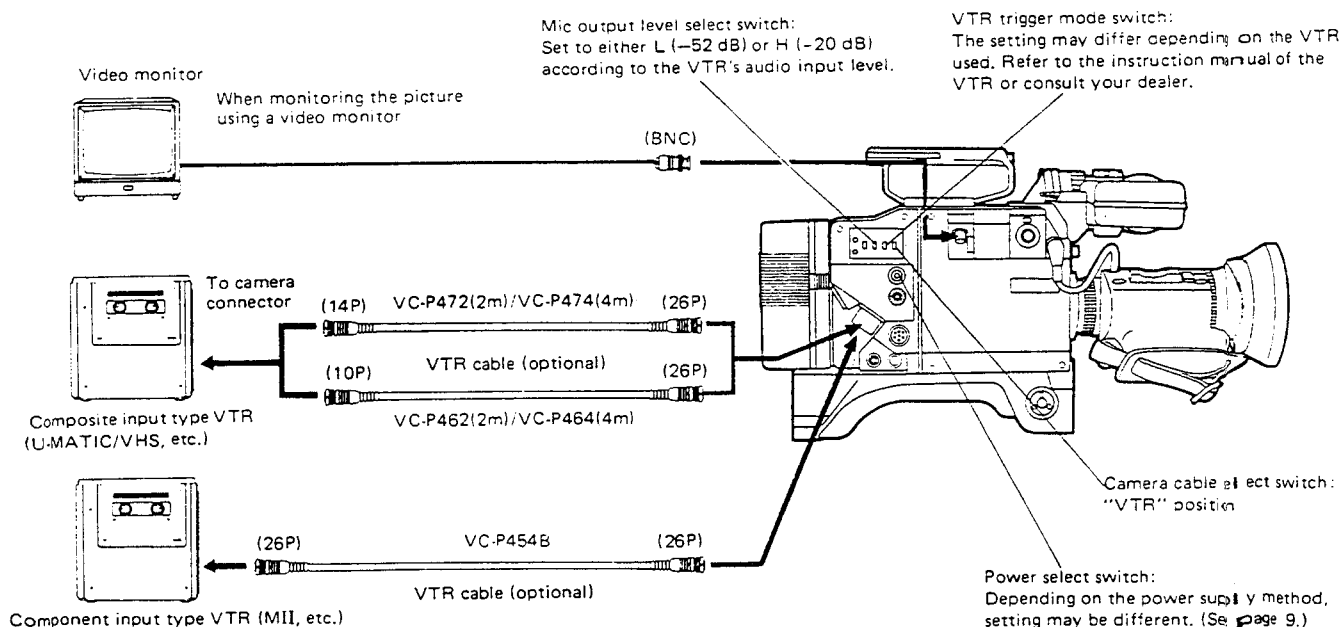
## CONNECTION TO VIDEO RECORDER

Before making connections, be sure that the power of the camera and units used is set to OFF.

### • Connecting to a VTR with the Y/C inputs (S-VHS video recorder)



### • Connecting to a VTR with the composite input (U-VCR/VHS, etc.) or component input (MII, etc.)





## BEFORE SHOOTING

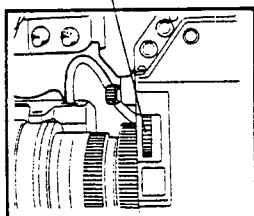
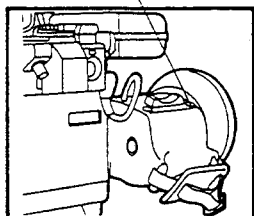
To record a clear picture with correct colors, it is necessary to adjust the back focus and auto setup.

Once the back focus is adjusted at the time of lens installation, subsequent adjustment is basically not necessary. However, with auto setup adjustment, be sure to adjust it in advance

every time shooting is done. Prior to adjustment, connect the VTR, TV monitor, etc. in accordance with the prescribed connection methods, then set up camera switches and controls as shown below.

### 1. PREPARATION

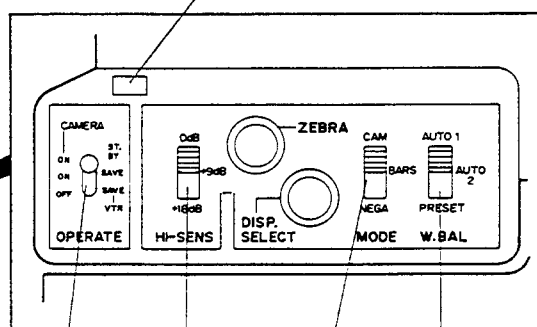
- 1** Iris mode switch: AUTO
- 2** Filter disk: Set according to the table on the right.



Filter indication	Color temperature	Shooting conditions
1	CLOSE	When the camera is not used
2	3200K	Sunrise or sunset, studio lighting
3	5600K	Outdoors; cloudy or rainy weather
4	5600K + 12.5% ND	Outdoors; bright or direct sun

- 3** Set the switches as shown below.

If the LED does not glow in red, no power is fed to the camera. Supply power by referring to page 9.



HI-SENS switch:  
0 dB

W-BAL switch:  
AUTO 1 or AUTO 2

Operation switch:  
ON/ST-BY  
(or ON/SAVE)

Camera/color bar select  
switch: CAM

Upon completion of setting, point the camera at an appropriate object, then operate the lens focus lever and zoom lever and monitor the picture in the viewfinder screen or monitor TV screen.

### 2. BACK FOCUS ADJUSTMENT

Perform this adjustment while observing the TV monitor or viewfinder.

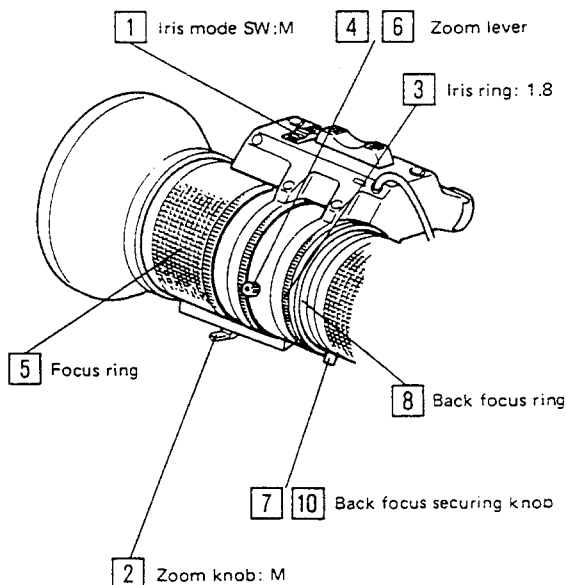
- 1** Set the iris mode switch on the lens to the "M" position.
- 2** Set the zoom knob on the lens to the "M" position.
- 3** Set the iris ring to "f1.8" (open).

At this time, if the lighting is too strong, reduce lighting or move to a dark place.

- 4** Fully turn the zoom lever to the TELE position.
- 5** Bring into focus using the focus ring.
- 6** Fully turn the zoom lever to the WIDE-angle position.
- 7** Loosen the back focus securing knob.
- 8** Turn the back focus adjustment lever, then adjust it to a position where the focusing is best.
- 9** Perform fine-tuning by repeating steps **4** to **8** a few times.
- 10** Finally, tighten the back focus securing knob.

#### Note:

The back focus adjustment is more accurate when the distance between the subject (pattern) and camera is more than 3 m (10 ft.).



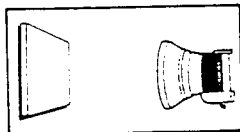


### 3. AUTO SETUP ADJUSTMENT (BLACK/WHITE BALANCE ADJUSTMENT)

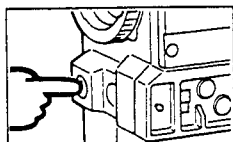
- Start adjustment following steps 1 to 3 (Refer to "1. PREPARATION") described previously.

- Auto setup will be performed in the order of black, white and black for adjustment of balance.

- 4** Shoot a white object (cloth, wall, etc.) so as to fill the viewfinder screen.



- 5** Hold the auto setup button depressed for longer than one second.

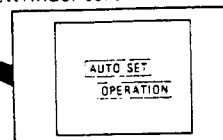


**Note:**

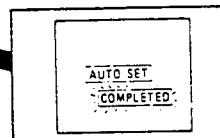
If the duration in which the auto setup button is being pressed is shorter than one second, only the white balance will be adjusted. Be sure to keep the button depressed for longer than one second for adjustment of the setup. For auto white balance, refer to page 13.

- 8** This completes the setup adjustment. The white balance state is automatically held in the built-in memory circuit.

- 6** The auto setup operation will start, and the following indication will appear in the viewfinder screen.



- 7** Upon completion of the setup adjustment, "COMPLETED" will be indicated flashing for about 4 seconds in the viewfinder screen.

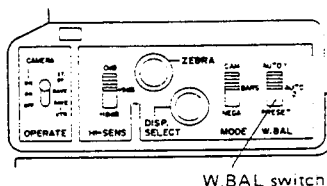


#### NOTE

- White balance memory**

The KY-25 and KY-H25 have two built-in white balance memory circuits and different color temperature states can be stored in memory, individually.

If the above auto setup adjustment is performed with the W.BAL switch set to "AUTO 1". The white balance state will be held in memory "AUTO 1". Likewise, if it is done with the switch set to "AUTO 2", it will be held in memory "AUTO 2".



W.BAL switch

- Display in the viewfinder**

If the above auto setup adjustment has not been done correctly, the "COMPLETED" indication as described in 7 above will not appear in the viewfinder screen.

Instead, the following error message or more light message will appear.

If the error message appears, check for the following causes and items, then perform auto setup adjustment again.

**Note:**

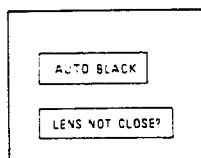
- The error message and more light message will flicker in the screen for about 4 sec. as will in the "COMPLETED" indication. After 4 sec. it goes out. Pay attention to the contents of the indication.

- Error message during auto black balance**

**LENS NOT CLOSE?**

**Cause:** The lens does not perform auto operation.

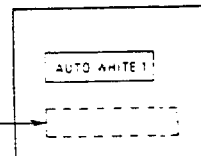
**Remedy:** Check for lens cable connection.



(Display)

- Error message during auto white balance (including the more light message)**  
(The display shows an example in which the W.BAL switch is set to "AUTO 1".)

Error message or more light message (Display)



- Error messages**

**LOW LIGHT ERROR**

**Cause:** Insufficient amount of light.

**Remedy:** Increase lighting or increase sensitivity using the HI-SENS switch. (If the sensitivity is increased, the S/N ratio will deteriorate.)

**OBJECT ERROR?**

**Cause:** The subject shot is not suitable.

**Remedy:** Check if the subject is a white object and change the subject if necessary.

**OVER LIGHT ERROR**

**Cause:** The incident light is too strong. The color temperature filter is not suitable.

**Remedy:** 1. Check to see if strong light such as sunlight or its reflection from the subject is directly introduced to the video camera.

2. Set the filter to the correct position.

- More light message**

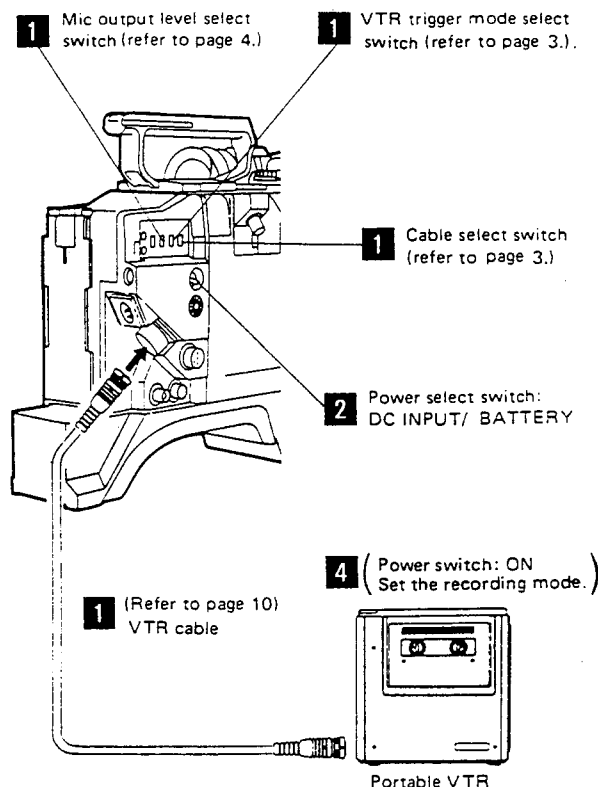
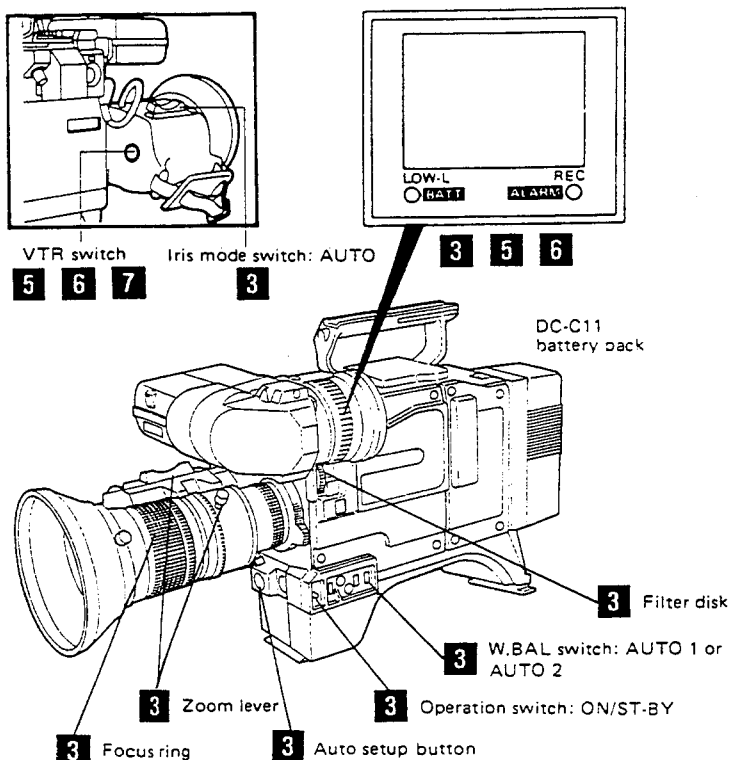
**MORE LIGHT**

This message is somewhat different from an error message. The "MORE LIGHT" indication appears when the amount of light is insufficient, indicating that the white balance has been automatically adjusted to a level detrimental to shooting. Although this situation may not be wrong, it is recommended that the amount of light be increased.



# OPERATION

## Recording using a portable VTR (When the DC-C11 is used)



### Preparation for recording

(The following steps, numbered 1 through 7, correspond to the numbers in the illustrations above, showing controls and switches to be operated in respective steps.)

- 1 Connect the portable VTR following the connection method given on page 10.
- 2 Supply power to the camera following the power supply method given on page 9.

#### Note:

When the BATT indicator or "BATT EMPTY?" display in the viewfinder flickers, the battery pack is nearly exhausted; replace with a fully-charged battery pack.

- 3 Perform auto setup adjustment following "Before shooting" on page 12.
- 4 Set the VTR to the recording mode.  
For the operation of the VTR, refer to the instruction manual of the VTR.
- 5 When the tape in the VTR starts moving, press the VTR switch on the lens.  
The VTR enters the recording pause mode.  
This completes the preparation.

### Recording

- 6 When the VTR switch on the lens is pressed, recording will commence. At this time, the REC lamp in the viewfinder comes on.
- 7 To stop recording, press the VTR switch again.  
The VTR stops in the recording pause mode. The REC lamp goes out.

### Power-save function of the VTR

If a 14-pin VTR (example: CR-4900) with a power save circuit is used, the power of the VTR can be saved during the interval from the recording pause to the restart of recording.

Operate as in the following:

- 1 Upon completion of the preparation for recording, set the operation switch to the "ON/SAVE" position.  
The Upper Drum of the VTR will be switched off in the recording pause mode.
- 2 To start recording, set the operation switch to the "ON/SAVE" position.  
The Upper Drum of the VTR will be switched on and the VTR enters the recording pause mode.
- 3 When the VTR switch on the lens is pressed, recording will start.

### White balance adjustment

If the camera is moved from indoors to outdoors or vice versa, the type of light source changes. This requires readjustment of white balance.

White balance can be adjusted by following the same procedure as described in "AUTO SETUP ADJUSTMENT" on page 12, but the way the auto setup button is pressed differs. For adjustment of white balance, press the auto setup button once and release it immediately. Be careful not to keep it depressed, otherwise the auto setup adjustment mode will be engaged.

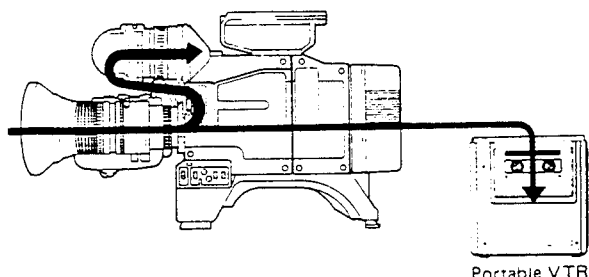
The display in the viewfinder shows **AUTO WHITE**, instead of **AUTO SET**. The rest is the same as for auto setup adjustment.



### Monitoring the picture

When the camera is connected with a portable VTR using the VTR cable, the picture can be monitored in the viewfinder.

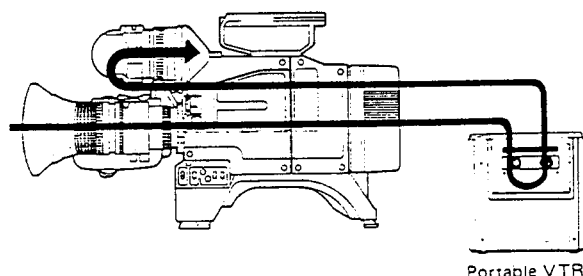
#### Monitoring the picture from the camera



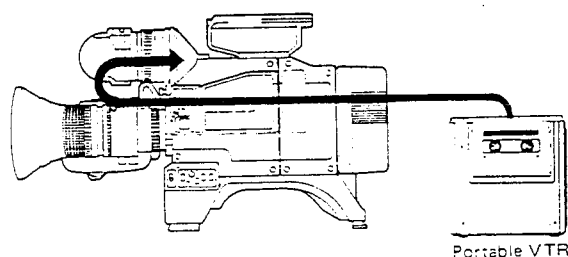
#### Monitoring the E-E mode picture from the VTR

While the return button (RET) on the lens is held depressed, or when the RET video switch on the portion of the camera where the microphone is mounted is set to the "ON" position, the return video signal can be monitored.

However, unless the VTR used has a return video signal function this is not possible. (This is impossible with a 10-pin type VTR.)



#### Monitoring the VTR playback picture



- For the playback operation of the VTR, refer to its instruction manual.

#### Contour (contour compensation) ON/OFF switch

To provide a sharper image, this camera has a built-in 2H contour compensation circuit for both vertical and horizontal signals. This circuit is factory-preset to ON.

The position of the contour switch can be confirmed in the character display. For details, refer to the character display description on page 15.

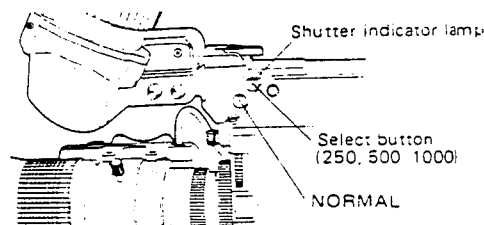
To switch off the contour compensation, remove the side cover on the right of the camera, set the CONTOUR switch on the internal CP board to "OFF". For detailed operation, consult your dealer.

### Electronic shutter

This function goes a long way when analyzing the motion of a fast moving object, etc. The position can be changed in 3 steps: 1/250, 1/500 and 1/1000, in addition to normal\*1/60 sec.

As the shutter speed is made faster to 1/250, 1/500 and 1/1000, the sensitivity will drop; therefore, shooting in a dark place is not possible. For selection, use the shutter speed select buttons (two) on top of the filter turret to the right side of the camera.

When the power of the camera is switched "ON", \*1/60 sec. is set as an initial setting. At this time, the shutter indicator lamp shown below does not light. (\*E-Version: 1/50 sec)



#### • Selecting the shutter speed

To change the shutter speed, press the upper button (250, 500, 1000) of the two buttons.

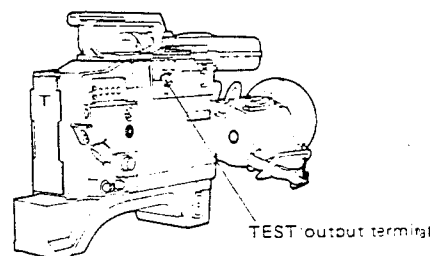
The shutter speed will change from 1/250, to 1/500 to 1/1000 sequentially every time this button is pressed and cycle in a loop. At this time, the shutter indicator lamp will come on. To set to the normal \*1/60 sec., press the lower button (NORMAL) of the two to return to the initial state.

The shutter speed setting can be confirmed by observing the viewfinder screen using the character display function of this camera.

For the display indication, refer to the character display indication on page 15. (\*E-Version: 1/50 sec)

#### Selecting the TEST OUT signal

The TEST output terminal on the left of the camera is factory-preset so that the composite video signal (VBS) is output. However, it is also possible to output any one of R, G, or B signal by internal switch. (\* R, G or B signal does not have a color component. Therefore, even if it is connected to a color monitor, it appears as a monochrome signal on the screen.)



To switch this, remove the side cover on the right of the camera, then change the setting of the "PIX SELE CT" switch on the internal CP board. When the test output signal is changed, the signal to be monitored on the viewfinder screen is also changed accordingly.

For further detailed operation, consult your JVC-authorized dealer.

The type of signal to be output to the TEST output terminal can be confirmed in the viewfinder screen using the display function of this camera.

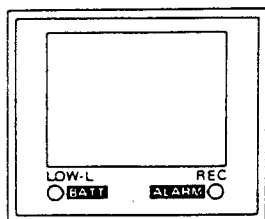
Refer to the character display indication described later.



## WARNING INDICATION AND CHARACTER DISPLAY

### Warning indication using LEDs

The viewfinder includes the following indicator lamps, giving a warning during shooting.



- **LOW-L/BATT (red)**

**LOW-L:** Lights when the camera's video output is too low. Even if the lamp is lit, recording can be done but the picture will be dark; however, this indicates that additional lighting is necessary.

**BATT:** Flashes when the battery in the camera or VTR (depending on the VTR used) is almost exhausted.

- **REC (green)**

**REC:** The REC (recording) lamp lights interlocked with the indicator lamp in front of the viewfinder.

**ALARM:** Flashes when the VTR connected to the camera has trouble or the tape comes to the end (depending on the VTR used).

**Note:**

The above warning functions depend on the VTR connected. Refer to the VTR's instruction manual.

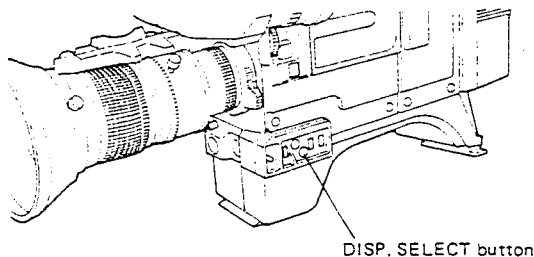
### Character display indication

The display indications include the STATUS indication, MODE indication and WARNING indication; the details of each are as follows:

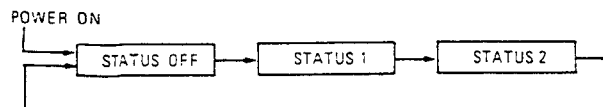
#### 1 STATUS indication

Various control switches and their settings are indicated by characters.

There are two display screens, which can be selected using the DISP. SELECT button.



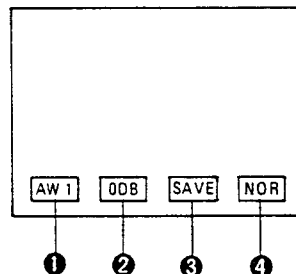
The DISP. SELECT button is a push-button switch, which changes as follows every time it is pressed.



The STATUS OFF indicates no-indication state, to which setting the display is always initialized when the operation switch is switched ON from OFF.

#### STATUS 1 indication

The following display appears in STATUS 1 mode.



#### 1 Position indication of the W.BAL switch

**PRE:** Indicates that the W.BAL switch is set to the "PRESET" position. The white balance of the camera is set to the preset (3200K) state and the auto setup function cannot be activated.

**AW 1:** Indicates that the W.BAL switch is set to the "AUTO 1" position. The white balance of the camera is set to the balance which is held in the "AUTO 1" memory of the camera.

If the auto setup adjustment is made while this is indicated, the white balance will be automatically adjusted and the balance at this point will be rewritten to the AUTO 1 memory.

**AW 2:** Indicates that the W.BAL switch is set to the "AUTO 2" position. Just as in the above AUTO 1, the white balance of the camera is set to the balance stored in the "AUTO 2" memory. If the auto setup adjustment is made while this is indicated, the AUTO 2 memory will be rewritten.

**MANU:** This is indicated if the optional remote control unit RM-P200 is connected and its W.BAL switch is set to the MANUAL position. Note that the auto setup adjustment or auto white balance adjustment cannot be done from the camera.

\* For the auto setup adjustment, refer to page 12.

#### 2 Position indication of the HI-SENS switch

**0 DB:** Indicates that the HI-SENS switch is set to the "0 dB" position.

**9 DB:** Indicates that the HI-SENS switch is set to the "+9 dB" position.

**18 DB:** Indicates that the HI-SENS switch is set to the "+18 dB" position.

#### 3 Indication of the VTR mode

**SAVE:** Indicates that the VTR is in the SAVE mode.

**STDBY:** Indicates that the VTR is in the ST-BY mode.

**REC:** Indicates that the VTR is in the REC mode.

**Note:**

"SAVE" indication is only when a 14-pin VTR with a power save facility is used. Nothing is indicated when a VTR other than this is used.



#### ④ Electronic shutter speed indication

**NOR** : Indicates that the shutter speed is set to \*1/60 sec.  
(E-Version: 1/50 sec)

**250** : Indicates that the shutter speed is set to 1/250 sec.

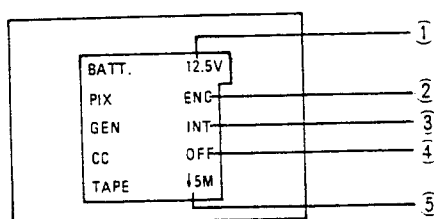
**500** : Indicates that the shutter speed is set to 1/500 sec.

**1000** : Indicates that the shutter speed is set to 1/1000 sec.

\* For changing the electronic shutter speed, refer to page 14.

#### STATUS 2 indication

The following display appears in the STATUS 2 mode.



##### ① Battery voltage indication

The battery voltage will be indicated digitally.

##### ② Signal indication of TEST OUT/VF OUT

The type of video signal appearing at the camera's TEST OUT terminal and viewfinder screen is indicated.

**PIX ENC** : The encoder output (Composite) signal is output.

**PIX R** : The red signal is output.

**PIX G** : The green signal is output

**PIX B** : The blue signal is output.

##### Note:

- The camera is factory-preset to the "PIX ENC" position. To obtain another signal output, change the setting of the "PIX SELECT" switch inside the camera. (Refer to page 14.)
- When the foregoing PIX R, PIX G or PIX B signal is output, the signal does not have a color component. Therefore, even if it is connected to a color monitor, it appears as a monochrome signal on the screen.

##### ③ GENLOCK mode indication

Indicates the genlock mode of the camera.

**GEN INT** : Operates by the internal SSG (sync signal generator) of the camera (INT mode).

**GEN EXT** : Indicates that the camera is genlocked to an external signal (EXT mode).

\* As for the connection with the external signal source in the EXT mode, refer to page 17.

##### ④ Contour indication

**CC ON** : The contour compensation is being made.

**CC OFF** : The contour compensation is not being made.

\* To switch ON or OFF the contour compensation, use the internal switch. For its operation, refer to page 14.

##### ⑤ Remaining tape indication

When the amount of remaining tape in the VTR becomes low, the remaining time is indicated. This is indicated only when the VTR used has a tape remaining detection circuit and can output a signal to the camera.

**TAPE ↓ 10M** : When the tape remaining time becomes less than 10 minutes, this is indicated.

**TAPE ↓ 5M** : When the tape remaining time becomes less than 5 minutes, this is indicated.

\* When the remaining tape time is 10 minutes or more, nothing is indicated.

#### ② MODE indication

The execution mode during the auto setup adjustment and auto white balance adjustment will be indicated.

When the auto setup button is pressed, if the status indication is displayed, it will disappear, and be replaced by the mode indication.

Upon completion of the auto setup operation or auto white balance operation, the results will be indicated for about 4 seconds, then the original status indication will be resumed.

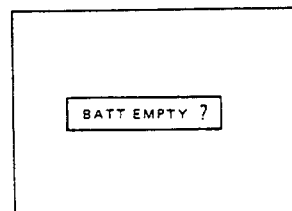
For the details of the execution mode indication, refer to "auto setup adjustment" on page 12.

#### ③ WARNING indication

When the battery is exhausted, the following indication will flash.

This indication will supersede other indications (STATUS and MODE).

When this indication appears, replace the old battery pack with a fully-charged battery pack as soon as possible.



## TROUBLESHOOTING

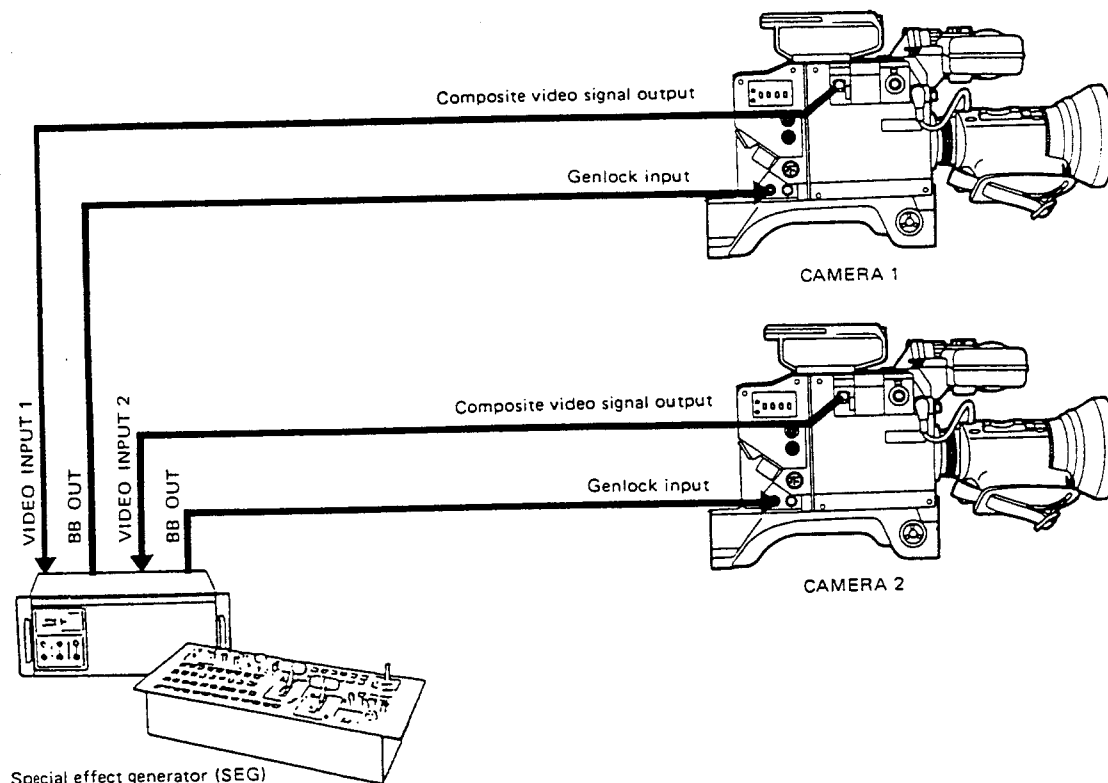
- Auto setup or auto white balance adjustment cannot be completed.
  - Is the filter turret correctly set?
  - Is the subject you are shooting a colored object?
- Auto setup or auto white balance adjustment cannot be performed.
  - No display appears in the viewfinder screen.
  - Are you pressing the RET button on the lens?
  - Is the camera's RET switch set to ON?
  - Are you monitoring the VTR playback picture?
- Viewfinder screen is darker, or no raster appears.
  - Scenes being shot are not visible in the viewfinder.
  - Are the viewfinder's contrast and brightness controls set properly?
  - Is the filter turret correctly set? Is the lens iris closed?
  - Is the camera's RET switch set to ON?



## GENLOCK OPERATION

When pictures from more than one camera are processed (fade-in, fade-out, mix/wipe) using a special effect generator (SEG), etc., each camera should be genlocked.

The genlocking is done by supplying the same composite video signal (VBS) or black burst signal (BB) to the GENLOCK input terminal of each camera.



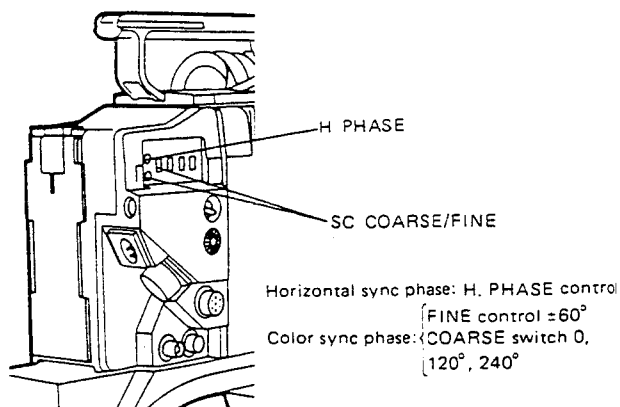
### Note:

- In case the remote control unit RM-P200 is not used as shown above, the camera's TEST output terminal is used. At this time, be sure that the composite video signal is output to the TEST output terminal. (Refer to page 14.)
- It is not possible to genlock this camera using the playback signal of the VTR. If you do, it may cause sync disorder or fluctuations in color phase. However, this is not a failure, but because the VTR's playback signal has time axis fluctuations equivalent to wow & flutter of a tape recorder. When the VTR's playback signal has to be used as the reference signal, the signal should be corrected using a time base corrector (TBC), etc.

### Phase adjustment

The illustration above shows an example of connecting a special effect generator to the cameras. If more than one camera is used as in this example, the horizontal phase and subcarrier phase of each camera output (VIDEO OUT) should be adjusted and matched with the reference signal supplied to the camera from outside.

For adjustment, use the following switches and controls on the left side of the camera.





# SPECIFICATIONS

## Color Video Camera KY-25/KY-H25

### Camera head

Image pickup device	: 2/3-inch interline CCD x 3 (R, G, B)
Color separation optical system	: 3-color separation prism
Effective number of pixels	: U-Version 728(H) x 493(V), 360,000 pixels : E-Version 728(H) x 587(V), 430,000 pixels
Color system	: U-Version NTSC (R-Y, B-Y method encoder) : E-Version PAL (R-Y, B-Y method encoder)
Synchronizing system	: Internal (built-in SSG) External (composite video or black burst signal)
Lens mount	: 2/3" Bayonet
Optical filter	: 3200K, 5600K, 5600K + 12.5 % ND
Sensitivity	: f5.6, 2000 lux
Practical minimum illumination	: f1.7 23 lux (+18 dB)
Sensitivity selection	: +9 dB, +18 dB
S/N ratio (standard)	: U-Version 60 dB typical (contour correction OFF, gamma 1, bandwidth 4.2 MHz, Matrix OFF) : E-Version 58 dB typical (contour correction OFF, gamma 1, bandwidth 5 MHz, Matrix OFF)
Horizontal resolution	: Typical 700 TV lines (Y channel) 530 TV lines (R, G and B each channel signal)
Registration	: Zone 1: 0.05 % or less (circle 80 % of picture height) Zone 2: 0.05 % or less (circle of picture width) Zone 3: 0.05 % or less (zone outside the above)
Contour correction	: Horizontal: dual-edged Vertical: 2H (with comb filter)
Video signal output 26-pin connector	: Composite video signal (VBS): 1 Vp-p, and Separate Y/C signals (compatible with S-VHS) or Component signal (Y/R-Y/B for MII or R/G/B ... 0.7 Vp-p, 75 $\Omega$ ) ... switchable
7-pin connector	: Separate Y/C signals (in Y/C 358 or Y/C 443 mode only)
Test output terminal	: Composite video signal (VBS): 1 Vp-p (any one of R, G, or B signal can be selected using the internal select switch (PIX SELECT))
Audio signal output	: -52 dBm, 600 ohm balanced, -20 dB unbalanced (switchable)
Audio monitor output	: Pin jack, 8 ohm, -20 dB
Mic input signal	: 6P/XLR-3, -52 dBm, 600 ohm (balanced when low signal is output and unbalanced when high signal is output)
Electronic shutter speeds	: *1/60 (normal), 1/250, 1/500, 1/1000 (switchable) (*E-Version:

Power source	: 1/50)
Current consumption	: 12 V DC (10.5 to 15 V) 1.5 A (including the viewfinder VF-P10)

Operating temperature range	: -5°C to +45°C
Weight	: 2.8 kg (KY-25) 2.35 kg (KY-H25)

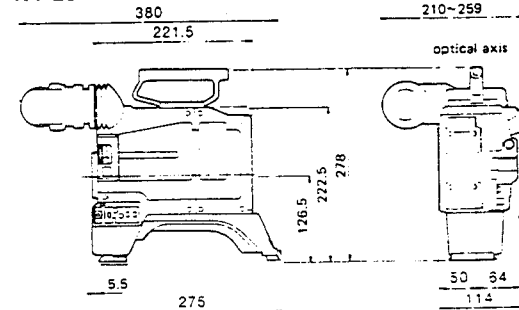
### Viewfinder VF-P10 (optional with the KY-H25)

Input signal	: Composite video signal 1 Vp-p (high input impedance)
CRT	: 1.5-inch diagonal 40LB4
Resolution	: 400 lines or more
Indication function	: Tally/top tally (can be switched off) and inside REC lamp Warning/battery (camera power supply) drop, LOW-L (video output) drop VTR tape end, abnormal indication
Power consumption	: 12 V DC, 250 mA
Operating temperature range	: -20°C to +50°C
Weight	: 650 g

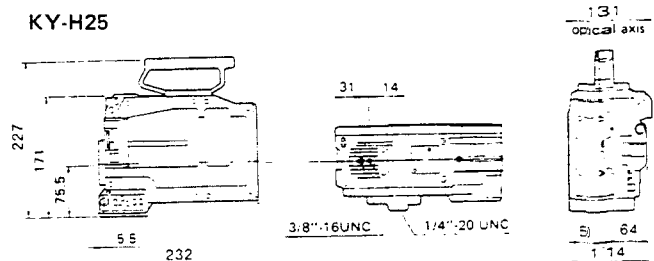
*Design and specifications subject to change without notice.*

### • Dimensions (unit: mm)

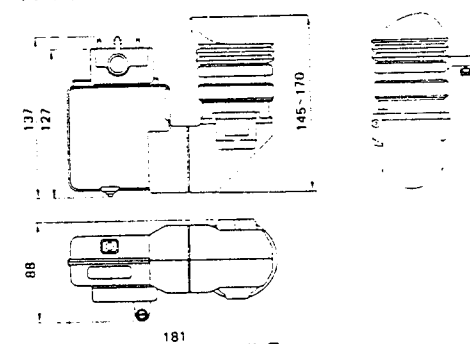
#### KY-25



#### KY-H25



#### VF-P10





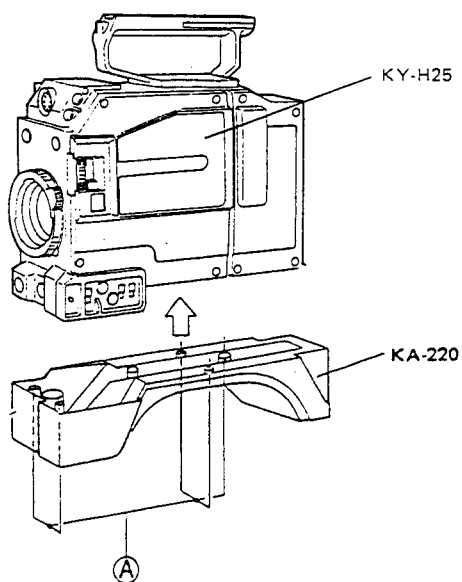
## KA-220 SHOULDER PAD

The KA-220 is a shoulder pad exclusively for use with the KY-H25 Color Video Camera.

### INSTALLATION

Mount on the KY-H25 using the 5 screws (A) provided with the KA-220.

Tighten the screws from the underside of the pad (bottom). Use a Philips screwdriver for tightening the screws (A).



### SPECIFICATIONS

Weight : 410 g (0.9 lbs)

Dimensions : 95(W) x 68(H) x 275(D) mm  
(3-3/4" x 2-11/16" x 10-7/8")



# **KY-R25 Instruction**



Thank you for purchasing the JVC KY-R25 Color Video Camera. Combined with the JVC BR-S410 S-VHS portable video cassette recorder, this camera forms a camcorder so that a single person can manage camera recording easily.

To gain maximum benefit from the camera, it is suggested that you study this booklet carefully. After reading, retain it for future reference.

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Features .....	20
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Specifications .....	32
KA-20 Camera Adapter .....	34

## PRECAUTIONS

- Do not modify the unit or operate it without cover panel to prevent danger.
- When there is any abnormality (abnormal noise, smell, smoke, etc.) with the unit, immediately turn the power off and contact your nearest JVC-authorized service agent.
- **Ambient temperature**  
Do not operate the camera outside a  $-5^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$  ( $23^{\circ}\text{F}$  to  $113^{\circ}\text{F}$ ) temperature range. Refer to the corresponding item in the "Specifications" on page 32.
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorrect.

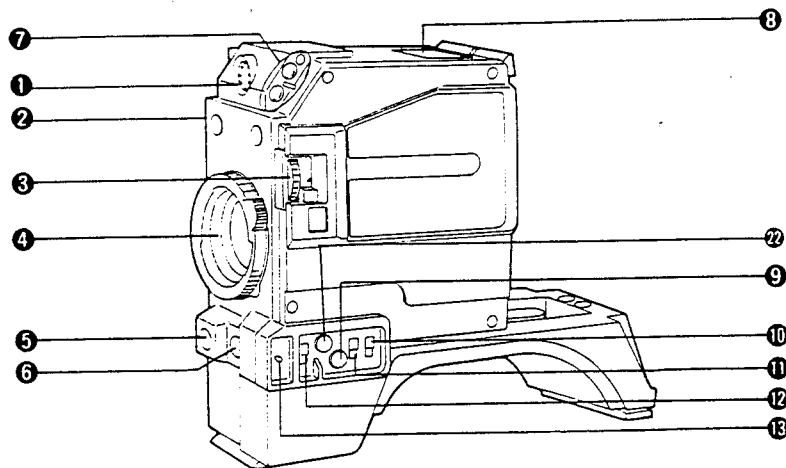
## FEATURES

- **Designed for combination with an S-VHS VTR into a camcorder**  
When combined with the BR-S410 S-VHS video cassette recorder, this camera forms a camcorder with excellent mobility and utility.
- **This 3-CCD camera meets the requirements for high picture quality.**
  - More compact, lighter in weight and consumes less power than conventional video cameras which use camera tubes.
  - Low lag, high resistance to image burning and no deflection distortion.
  - As the camera has a high sensitivity and S/N, high picture quality can be obtained in dark places.
  - Excellent in vibration resistance and impact resistance.
  - Virtually no misregistration as the image device is free from the influence of terrestrial magnetism.
- **Built-in electronic shutter**  
The scanning of the TV camera is  $\frac{1}{60}$  sec. (\*PAL:  $\frac{1}{50}$  sec) when converted to a shutter speed; the image will get blurred if the subject is moving at high speed. However, thanks to the built-in electronic shutter function, the shutter speed can be selected in 3 steps:  $\frac{1}{250}$ ,  $\frac{1}{500}$  and  $\frac{1}{1000}$ , the camera goes a long way in analyzing motion, etc.
- **Character display facility**  
On the screen of the viewfinder VF-P10, the camera's operating conditions are indicated by characters (STATUS/MODE/WARNING). While looking into the viewfinder, quick and positive camera operation is possible.
- **Microcomputer-controlled automatic systems**  
In addition to auto white/black balance, the auto iris can be controlled by the built-in microcomputer. As a result, in the auto white/black balance adjustment, a highly precise adjustment is possible with ease by one-touch operation. And in the auto iris mode, the optimum amount of light can be selected under any shooting conditions.
- **Comprehensive functions**
  - 2H contour provided as standard.
  - 3-mode white balance setting  
With white balance, two memories and 3200K preset are possible. This is effective in case of an emergency or shooting at two locations.
  - Negative signal/positive signal select switch is provided.
  - Built-in color matrix circuit
  - Stereo sound output. If optional stereo microphone MV-P602 is used, stereo sound is output.



# CONTROLS, CONNECTORS AND INDICATORS

Camera Head



## 1 Viewfinder connector (VF)

Connector for a exclusive viewfinder (VF-P10).

## 2 Lens connector (LENS)

Connect the cable from the standard lens.

## 3 Filter turret

The turret for the Neutral Density and color temperature conversion filters is provided with four positions.

- 1) CLOSE: Same condition as lens being capped.
- 2) 3200K: For shooting indoors or outdoors with insufficient light.
- 3) 5600K: For shooting outdoors.
- 4) 5600K ND: The 12.5 % ND filter and 5600K color filter are combined for shooting outdoors on a fine day.

## 4 Lens mount ring

## 5 Auto setup button (AUTO SETUP)

Press this button to adjust the setup (black/white balance) or the white balance automatically and save the state in memory. When the button is pressed once, the white balance is adjusted; when depressed continuously for longer than one second, the setup is adjusted.

Before pressing this button, set white balance mode switch 10 to the AUTO 1 or AUTO 2 (whichever you want to save) position.

## 6 Video recorder start switch (VTR)

For start/stop triggering of the VTR.

## 7 Shutter speed select button and indicator lamp (SHUTTER)

This button permits speed selection of the electronic shutter. This is effective when shooting fast-moving subject.

250 500 1000  
Every time this button is pressed, the shutter speed will change to 1/250, 1/500 and 1/1000 in this order (cyclic operation). At this time, the indicator lamp comes on.

NORMAL

If this button is pressed, the shutter speed will become \*1/60. Usually use in this state. The indicator lamp goes out. (\*E-Version: 1/50)

## 8 Carrying handle mounting section

Attach the provided carrying handle (KA-232).

## 9 Display select button (DISP SELECT)

This camera has a function to display the setting conditions of various control switches and settings in the viewfinder screen. There are two display screens; every time this button is pressed, the display will change from "no indication" to "screen 1" to "screen 2" repeatedly.

## 10 White balance mode switch (W BAL)

This switch permits mode selection of white balance.

AUTO 1: Set to either position when activating the auto and setup or auto white balance function. This AUTO 2 camera has two auto white memory circuits and this switch serves as its select switch.

PRESET: For using in the preset (3200K) state.

## 11 Camera/color bar select switch (MODE)

CAM: Outputs the video signal from the camera to the VTR.

BARS: Outputs the color bar signal to the VTR.

NEGA: Outputs the negative video signal from the camera VTR.

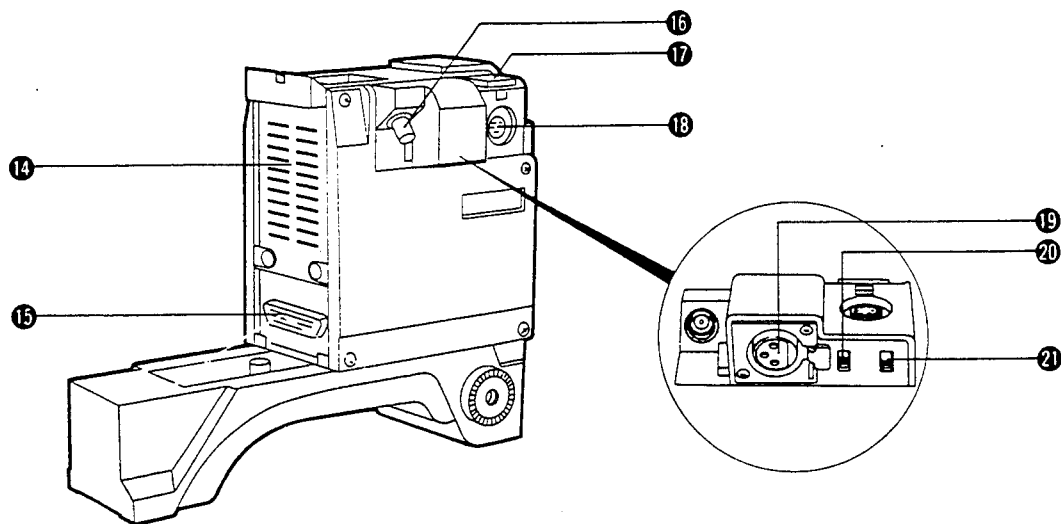
## 12 Sensitivity select switch (HI-SENS)

For use in low light conditions, the camera sensitivity gain can be boosted by +9 dB or +18 dB. Normally, set this to "0 dB".

## 13 Operation switch (CAMERA/VTR)

3-step select switch. Selects "ON", "OFF" of the camera power and VTR power-save mode.





**14 VTR mount**

Mount an S-VHS VTR compatible with the KY-R25. (At present the VTR to be used is the JVC BR-S410, sold separately.)

**15 VTR connector (50 pin)**

Connect the 50-pin connector of BR-S410 video cassette recorder.

**16 Test output connector (TEST OUTPUT)**

The signal selected by the internal "PIX SELECT" switch is output here. Either composite video signal (VBS), or B, G, R signal can be selected as an output. This is factory-preset to the composite video signal output.

**17 Exclusive microphone mounting shoe**

Shoe for mounting the exclusive microphone M-K50 (monaural type) or MV-P602 (stereo type).

**18 Exclusive microphone input socket (MIC)**

Input socket for the exclusive microphone.

**19 Mic input socket (MIC INPUT)**

Input socket for the microphone with a 3-pin Cannon connector. The input is parallel with MIC connector 18.

**20 Mic output select switch (MIC)**

Switches between monaural (L-ch) and stereo (R-ch/L-ch) in accordance with the VTR's audio track specification when recording is to be made onto the VTR via microphone connector 18.

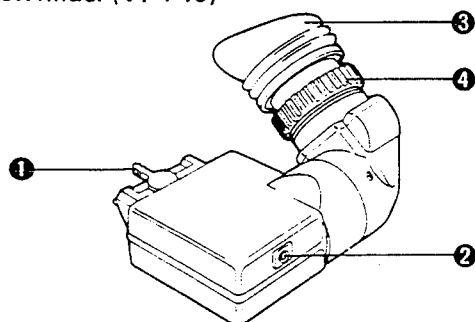
**21 VF AUX video select switch (RET)**

When the VTR is set to the playback mode and if this switch is set to ON, the playback picture can be monitored in the viewfinder. This serves the same function as the RET switch on the lens.

**22 Zebra button (ZEBRA)**

Switches the zebra pattern video level indicator on the viewfinder ON/OFF.

**Viewfinder (VF-P10)**



**1 Slide lock lever**

After the viewfinder has been attached to the camera, the viewfinder can be slid to the left and right (by 40 mm) if this lever is loosened.

**2 Tally lamp**

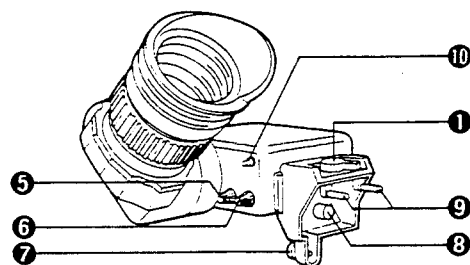
This LED comes on to indicate the recording mode. To switch it off, set switch 10 to OFF.

**3 Eyepiece**

Focusing adjustment is possible.

**4 Eyepiece fixing ring**

Loosen and adjust the eyepiece back and forth to match your vision.



**5 Contrast control (CONT)**

**6 Brightness control (BRIGHT)**

**7 Lock screw**

Use to lock the viewfinder onto the camera.

**8 VF connector**

Directly connected to the video camera.

**9 Viewfinder fixing pins**

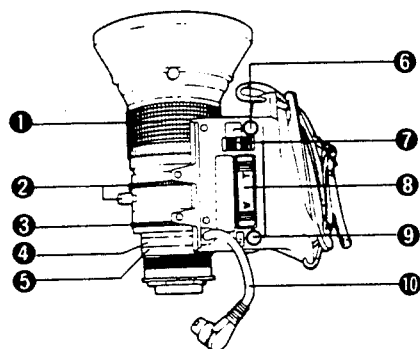
Insertion pins for use in attaching to the video camera.

**10 Tally switch (TALLY)**

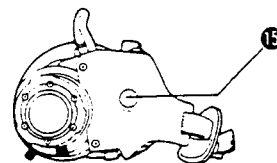
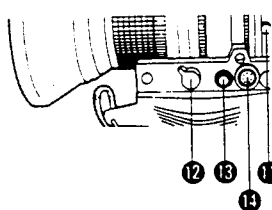
Turns the top tally lamp 2 off even when the camera (VTR) is recording. The REC indicator inside the viewfinder will be kept ON.



## Zoom Lens (HZ-516B, optional)



- 1 Focus ring**  
Focus adjustment ring.
- 2 Zoom lever/zoom ring**  
Ring and lever for manual zooming.
- 3 Iris ring**  
When the iris mode switch **7** is set to "M" (manual), the iris can be opened and closed manually using this ring. When it is set to "A", the iris is opened and closed automatically.
- 4 Back focus ring**  
For the back focus adjustment, turn this ring.
- 5 Macro ring**  
If the ring is turned fully in the direction of the arrow, macro shooting at a distance of about 9 cm from the subject will be possible.
- 6 Momentary iris switch**  
Even during the manual iris operation with the iris mode switch set to "M" (manual), iris control can be automatic as long as this button is kept depressed.
- 7 Iris mode switch**  
A: For auto iris operation  
M: For manual iris operation



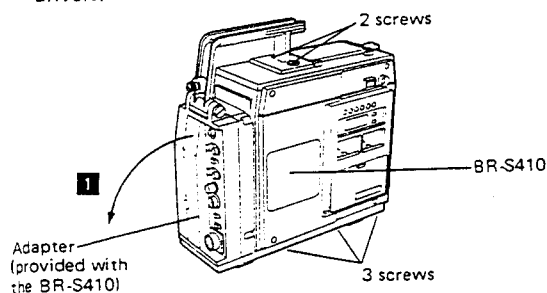
- 8 Zoom servo lever**  
The speed and direction of the servo zooming is controlled by this see-saw switch.
- 9 Return switch (RET)**  
The return video signal from the VTR can be monitored in the viewfinder while this switch is depressed.
- 10 Lens cable**  
Connect the lens connector on the camera head.
- 11 Securing knob**  
For fixing back focus ring **4**.
- 12 Zoom mode knob (ZOOM)**  
S: For power zooming  
M: For manual zooming
- 13 Focus servo connector**  
For connecting the optional focus servo unit.
- 14 Zoom servo connector**  
For connecting the optional zoom servo unit.
- 15 VTR switch (VTR)**  
For the start/stop operation of the VTR.

R: This position can not be used.

## INSTALLATION

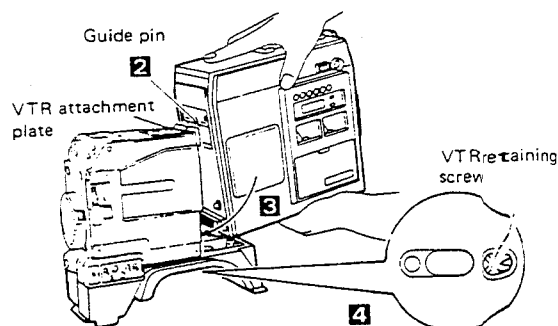
### Mounting the S-VHS VTR (BR-S410)

- 1** Remove the adapter from the BR-S410.  
The adapter is secured to the BR-S410 with three screws on the bottom and two screws on the handle grip on top. To loosen these screws, use flathead and phillips screwdrivers.

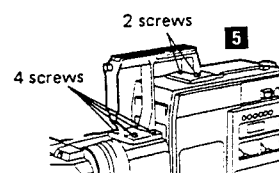


- 2** Aligning the guide pin of the BR-S410 to the V-groove on the VTR attachment plate of the KY-R25, press the BR-S410's 50-pin connector against its counterpart on the KY-R25.
- 4** After confirming that the 50-pin connections have been made correctly, secure the two units by tightening the VTR

retaining screw from underneath the shoulder pad of the KY-R25 with a screwdriver.



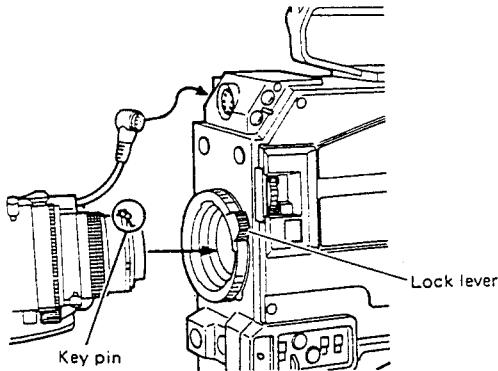
- 5** Install the carrying handle (KA-232, accessory) onto the camera head and VTR using the phillips screwdriver.





### Lens Installation (Optional HZ-516B)

- 1 Be careful of the key pin of the lens and slot of the mount ring groove, then insert the lens flange into the mount groove firmly.
- 2 Turn the lock lever clockwise to fix the lens.
- 3 Connect the lens cable to the camera head.

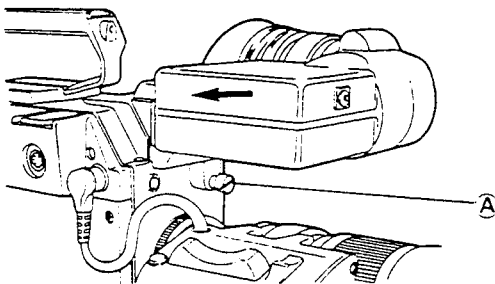


#### Note:

Make sure that the lens is firmly attached. Otherwise, the back focus adjustment may be incorrect.

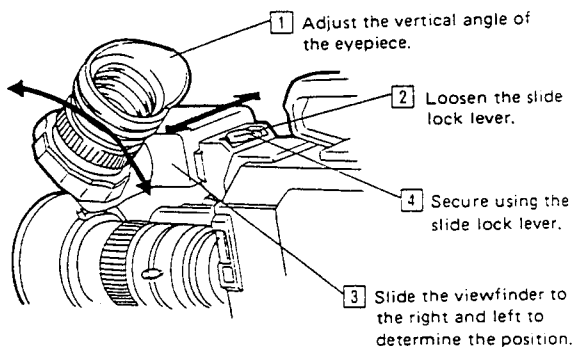
### Viewfinder Installation (VF-P10)

- 1 Mate the viewfinder fixing pin with the mounting hole of the camera head, then insert.
- 2 Insert it all the way, then confirm that the viewfinder has been positively connected and turn viewfinder fixing screw A clockwise to lock it.

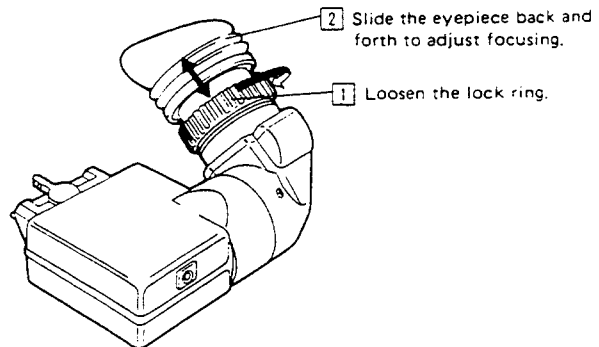


#### • Eyepiece adjustment

- Vertical angle and left/right slide adjustment



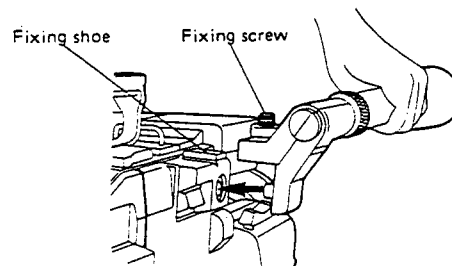
#### • Focusing adjustment



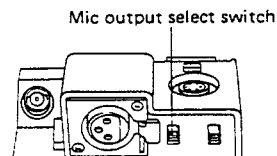
### Microphone Installation

#### Exclusive microphone (M-K50 or MV-P602, optional)

- 1 Insert the microphone into the mic holder fixing shoe on the right top of the camera.
- 2 Secure the microphone using the fixing screw.



- 3 Set the mic output select switch (illustrated below) according to the type of microphone used.  
MONO : For M-K50  
STEREO : For MV-P602



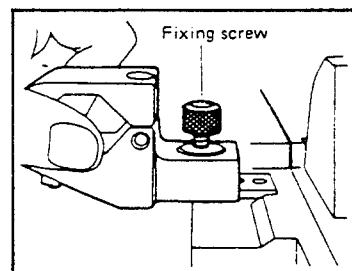
#### Note:

- Lens motor noise or mechanical friction noise may be picked up by the microphone and recorded. Check possible noise conditions in advance.

#### Ordinary microphone

Install the microphone onto the camera head using the optional mic holder (Part No. SCUA30312, service parts).

- 1 Insert the mic holder into the mic holder fixing shoe on the right top of the camera, then fix it using the fixing screw.



- 2 Connect the microphone output to the MIC connector on the camera head.
- 3 Set the mic output select switch to "MONO".



## POWER SUPPLY

- The KY-R25 camera is powered from the VTR via the 50-pin connector.
- Supply power to the VTR using the optional NB-G1 battery pack or \*AA-P200/AA-P250 AC power adapter. To use the

battery pack, the optional battery holder (accessory of BR-S410) is also necessary. For the power supply method or connection, refer to the instruction manual of the relevant power unit or the VTR. (\*AA-P200: U-Version only)

## BEFORE SHOOTING

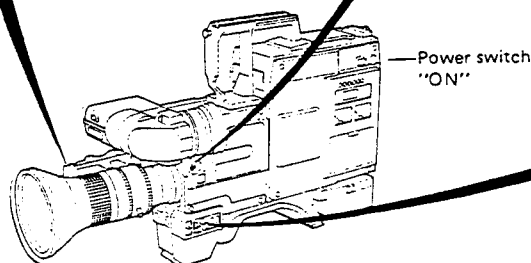
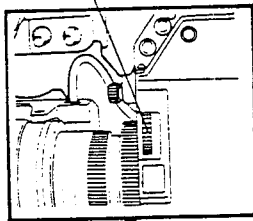
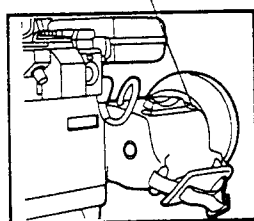
To obtain clear pictures with correct tints, perform back focus and auto setup adjustments. As a rule, back focus adjustment has only to be done when a different lens is mounted. However, auto setup must be adjusted before each shooting

session.

For this adjustment, supply power to the camera/VTR combination and set the controls and switches as follows:

### 1. PREPARATION

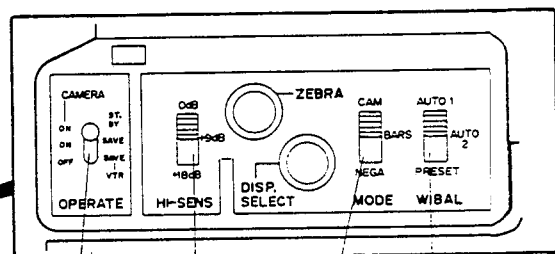
- Iris mode switch: AUTO
- Filter disk: Set according to the table on the right.



Upon completion of setting, point the camera at an appropriate object, then operate the lens focus lever and zoom lever and monitor the picture in the viewfinder screen.

Filter indication	Color temperature	Shooting conditions
1	CLOSE	When the camera is not used
2	3200K	Sunrise or sunset, studio lighting
3	5600K	Outdoors; cloudy or rainy weather
4	5600K + 12.5% ND	Outdoors; fine weather

- Set the switches as shown below.



Operation switch: ON/ST-BY (or ON/SAVE)  
 HI-SENS switch: 0 dB  
 ZEBRA  
 DISP. SELECT  
 CAM  
 AUTO 1  
 AUTO 2  
 PRESET  
 W/BAL  
 WHITE BAL switch: AUTO 1 or AUTO 2  
 Camera/color bar select switch: CAM

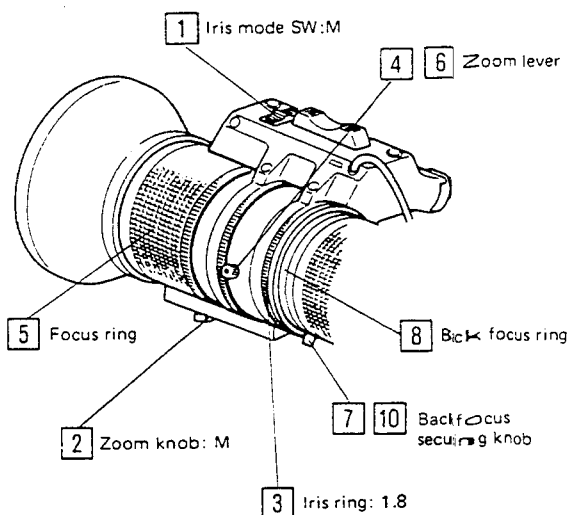
### 2. BACK FOCUS ADJUSTMENT

Perform this adjustment while observing the monitor TV or viewfinder.

- Set the iris mode switch on the lens to the "M" position.
- Set the zoom knob on the lens to the "M" position.
- Set the iris ring to "f1.8" (open).
- At this time, if the lighting is too strong, reduce lighting or move to a darken place.
- Fully turn the zoom lever to the TELE position.
- Bring into focus using the focus ring.
- Fully turn the zoom lever to the WIDE-angle position.
- Loosen the back focus securing knob.
- Turn the back focus adjustment lever, then adjust it to a position where the focusing is best.
- Perform fine-tuning by repeating steps [4] to [8] a few times.
- Finally, tighten the back focus securing knob.

#### Note:

The back focus adjustment is more accurate when the distance between the subject (pattern) and camera is more than 3 m (10 ft.).

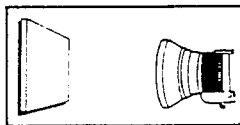




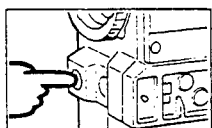
### 3. AUTO SETUP ADJUSTMENT (BLACK/WHITE BALANCE ADJUSTMENT)

- Start adjustment following steps **1** to **3** (Refer to "1. PREPARATION") described previously.

- 4** Shoot a white object (cloth, wall, etc) so as to fill the viewfinder screen.

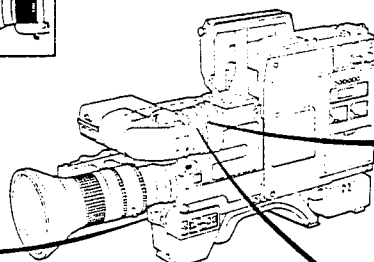


- 5** Hold the auto setup button depressed for longer than one second.



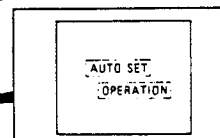
Note:

If the duration in which the auto setup button is being pressed is shorter than one second, only the white balance will be adjusted. Be sure to keep the button depressed for longer than one second for adjustment of the setup. For auto white balance, refer to page 28.

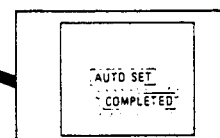


- 8** This completes the setup adjustment. The white balance state is automatically held in the built-in memory circuit.

- 6** The auto setup operation will start, and the following indication will appear in the viewfinder screen.



- 7** Upon completion of the setup adjustment, "COMPLETED" will be indicated flashing for about 4 seconds in the viewfinder screen.

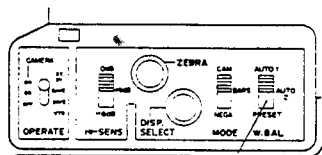


#### NOTE

##### • White balance memory

The KY-R25 have two built-in white balance memory circuits and different color temperature states can be stored in memory, individually.

If the above auto setup adjustment is performed with the W.BAL switch set to "AUTO 1". The white balance state will be held in memory "AUTO 1". Likewise, if it is done with the switch set to "AUTO 2", it will be held in memory "AUTO 2".



W.BAL switch

##### • Display in the viewfinder

If the above auto setup adjustment has not been done correctly, the "COMPLETED" indication as described in **7** above will not appear in the viewfinder screen.

Instead, the following error message or more light message will appear.

If the error message appears, check for the following causes and items, then perform auto setup adjustment again.

Note:

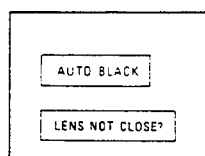
- The error message and more light message will flicker in the screen for about 4 sec. just as in the "COMPLETED" indication, then go out. Pay attention to the contents of the indication.

##### • Error message during auto black balance

###### LENS NOT CLOSE?

Cause: The lens does not perform auto operation.

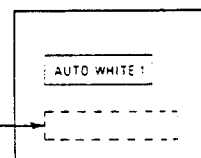
Remedy: Check for lens cable connection.



(Display)

- Error message during auto white balance (including the more light message)  
(The display shows an example in which the W.BAL switch is set to "AUTO 1".)

Error message or more light message (Display)



##### • Error messages

###### LOW LIGHT ERROR

Cause: Insufficient amount of light.

Remedy: Increase lighting or increase sensitivity using the HI-SENS switch. (If the sensitivity is increased, the S/N ratio will deteriorate.)

###### OBJECT ERROR?

Cause: The subject shot is not suitable.

Remedy: Check if the subject is a white object and change the subject if necessary.

###### OVER LIGHT ERROR

Cause: The incident light is too strong. The color temperature filter is not suitable.

Remedy: 1. Check to see if strong light such as sunlight or its reflection from the subject is directly introduced to the video camera.

2. Set the filter to the correct position.

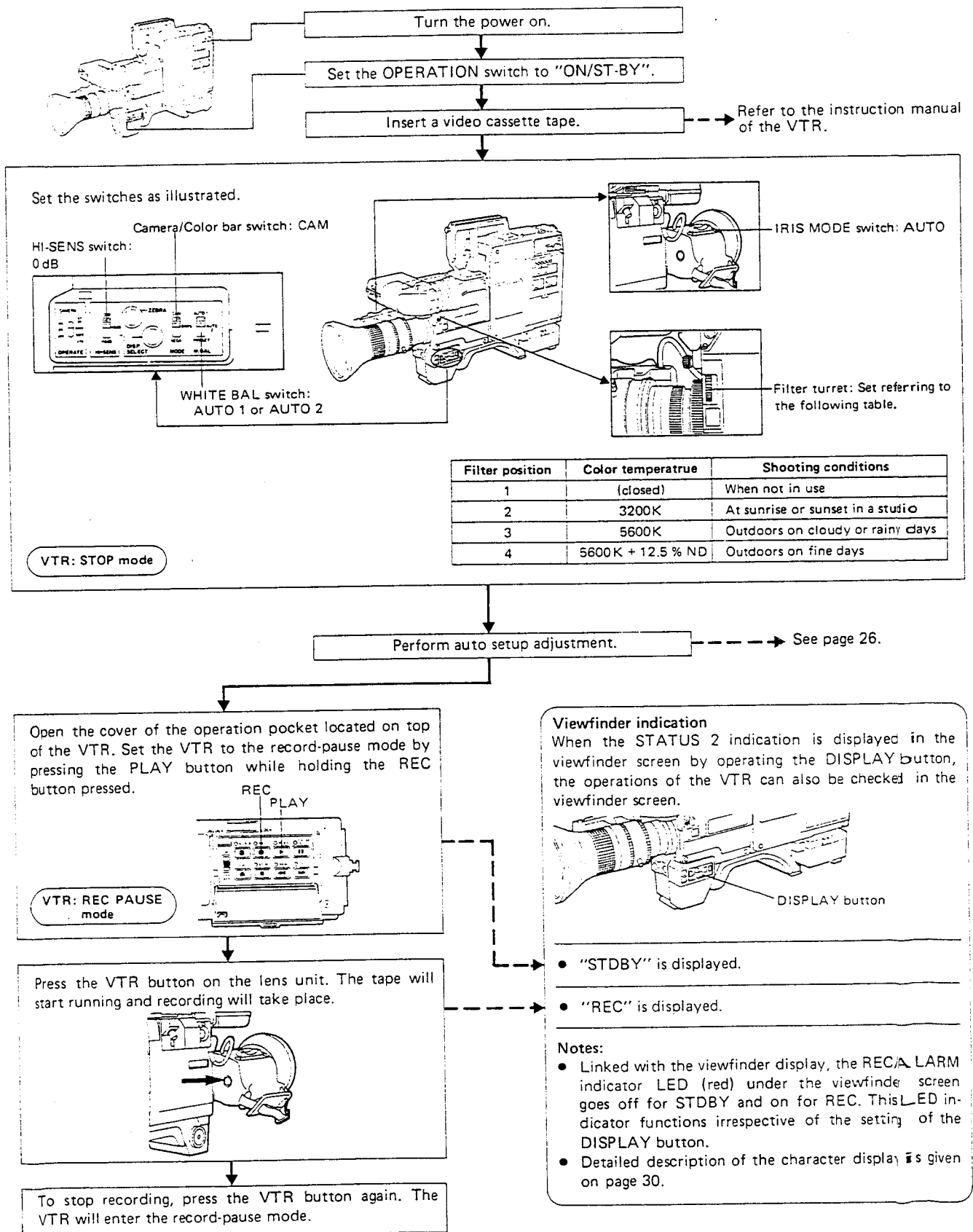
##### • More light message

###### MORE LIGHT

This indication is somewhat different from an error message. This indication appears when the amount of light is insufficient, indicating that the white balance has been automatically adjusted to a level not detrimental to shooting. Although this is not incorrect, it is recommended that the amount of light be increased.



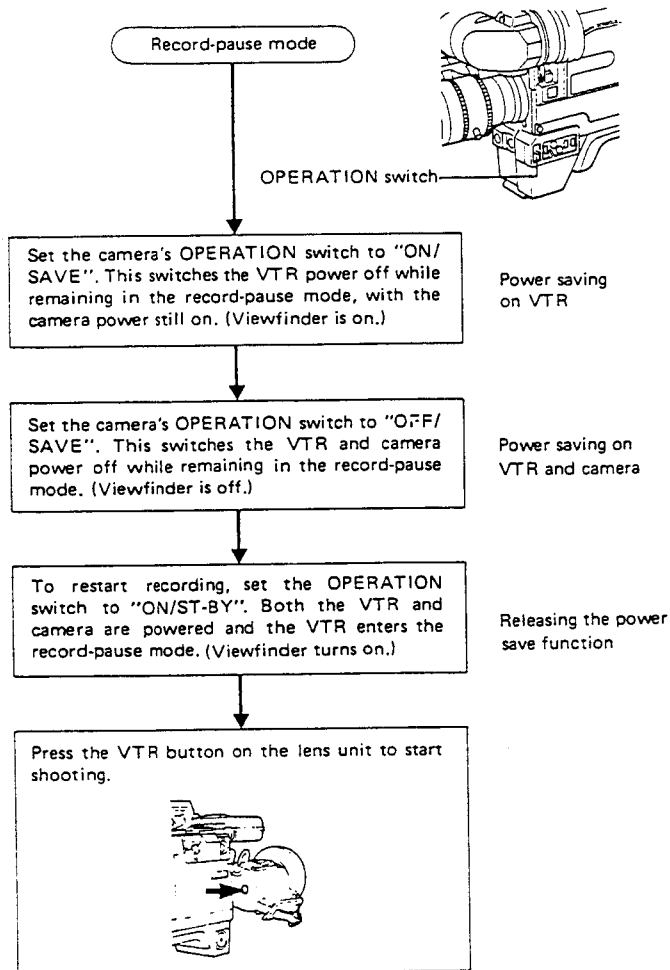
# BASIC RECORDING PROCEDURE





## POWER SAVING OPERATIONS

Power save functions are incorporated in this system, cutting the power consumption of either the VTR or both the VTR and camera while in the record-pause mode. To save power, after the record-pause mode is engaged, proceed as follows:

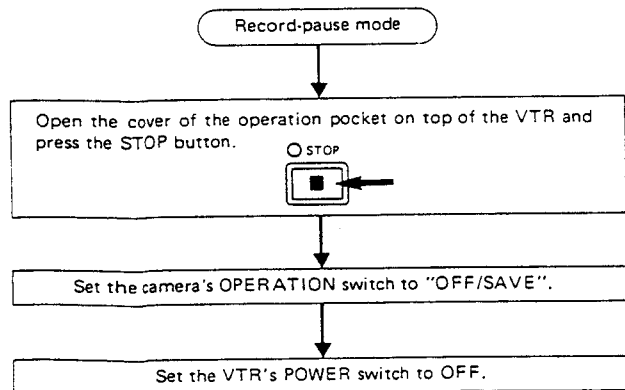


### Note:

If the VTR's OPERATION button is pressed in the power save mode, the VTR is turned on and enters the stop mode automatically from the record-pause mode. Recording cannot be restarted by the above-mentioned procedure from this mode. If this happens, first set the VTR to the record-pause mode.

## Ending Recording

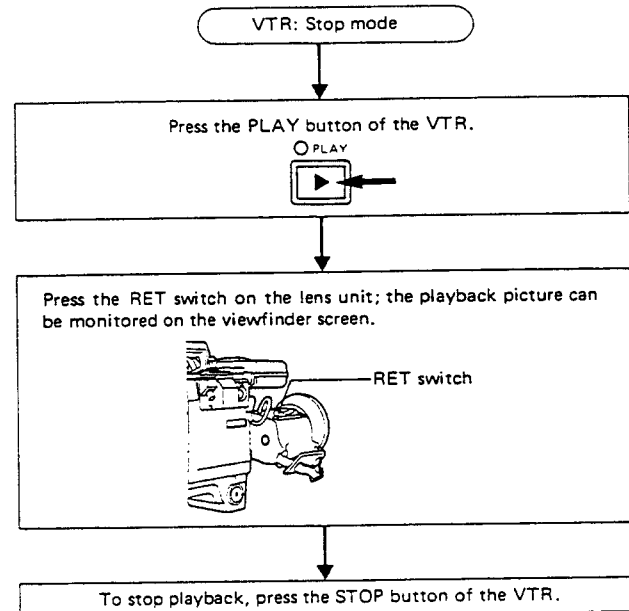
To end recording, proceed as follows:



### Note:

If the OPERATION switch is set to "OFF/SAVE" while in the record-pause mode, the power save function operates and the power of the camera and VTR is turned off while in the record-pause mode, in which the tape is still loaded around the head drum of the VTR. To avoid damaging the tape and video heads, be sure to follow the procedure described above.

## Monitoring the Playback Picture



## White balance adjustment

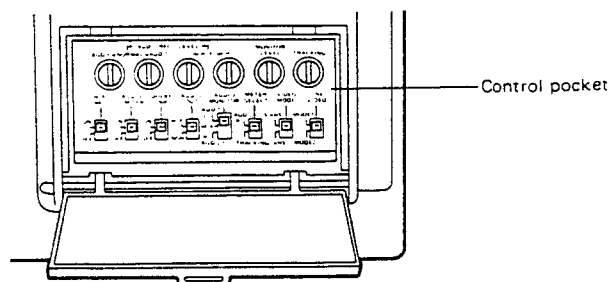
If the camera is moved from indoors to outdoors or vice versa, the type of light source changes. This requires readjustment of white balance.

White balance can be adjusted by following the same procedure as described in "AUTO SETUP ADJUSTMENT" on page 26, but the way the auto setup button is pressed differs. For adjustment of white balance, press the auto setup button once and release it immediately. Be careful not to keep it depressed, otherwise the auto setup adjustment mode will be engaged.

The display in the viewfinder shows **AUTO WHITE**, instead of **AUTO SET**. The rest is the same as for auto setup adjustment.

## Audio Operation and Level Control

All controls related to audio recording are located in the control pocket of the VTR. For operations of these controls refer to the instruction manual of the VTR.



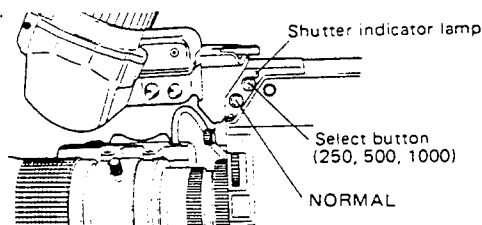


### Electronic shutter

This function goes a long way when analyzing the motion of a fast moving object, etc. The position can be changed in 3 steps: 1/250, 1/500 and 1/1000, in addition to normal 1/60 sec.

As the shutter speed is made faster to 1/250, 1/500 and 1/1000, the sensitivity will drop; therefore, shooting at a dark place is not possible. For selection, use the shutter speed select buttons (two) on top of the filter turret to the right side of the camera.

When the power of the camera is switched "ON", 1/60 sec. (U-Version)/1/50 sec. (E-Version) is set as an initial setting. At this time, the shutter indicator lamp shown below does not light.



#### ● Selecting the shutter speed

To change the shutter speed, press the upper button (250, 500, 1000) of the two buttons.

The shutter speed will change from 1/250, to 1/500 to 1/1000 sequentially every time this button is pressed and cycle in a loop. At this time, the shutter indicator lamp will come on. To set to the normal 1/60 sec. (U-Version)/1/50 sec. (E-Version), press the lower button (NORMAL) of the two to return to the initial state.

The shutter speed setting can be confirmed by observing the viewfinder screen using the character display function of this camera.

For the display indication, refer to the character display indication on page 30.

### Contour (contour compensation) ON/OFF switch

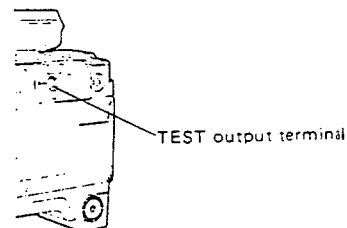
To provide a sharper image, this camera has a built-in 2H contour compensation circuit for both vertical and horizontal signals. This circuit is factory-preset to ON.

The position of the contour switch can be confirmed in the character display. For details, refer to the character display description on page 30.

To switch off the contour compensation, remove the side cover on the right of the camera, set the CONTOUR switch on the internal CP board to "OFF". For detailed operation, consult your dealer.

### Selecting the TEST OUT signal

The TEST output terminal on the left of the camera is factory-preset so that the composite video signal (VBS) is output. However, it is also possible to output any one of R, G, or B signal by internal switch. (\* R, G, or B signal does not have a color component. Therefore, even if it is connected to a color monitor, it appears as a monochrome signal on the screen.)



To switch this, remove the side cover on the right of the camera, then change the setting of the "PIX SELECT" switch on the internal CP board. When the test output signal is changed, the signal to be monitored on the viewfinder screen is also changed accordingly.

For further detailed operation, consult your JVC authorized dealer.

The type of signal to be output to the TEST output terminal can be confirmed in the viewfinder screen using the display function of this camera.

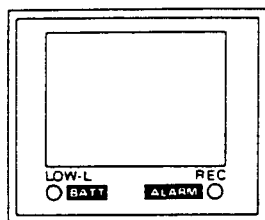
Refer to the character display indication described later.



# WARNING INDICATION AND CHARACTER DISPLAY

## Warning indication using LEDs

The viewfinder includes the following indicator lamps, giving a warning during shooting.



- **LOW-L/BATT (red)**

**LOW-L:** Lights when amount of light is too low. Even if the lamp is lit, recording can be done but the picture will be a dark; however, this indicates that additional lighting is necessary.

**BATT:** Flashes when the battery in the camera or VTR is almost exhausted.

- **REC (green)**

**REC:** The REC (recording) lamp lights interlocked with the indicator lamp in front of the viewfinder.

**ALARM:** Flashes when the VTR has trouble or the tape comes to the end.

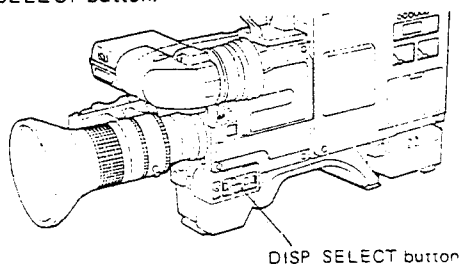
## Character display indication

The display indications include the STATUS indication, MODE indication and WARNING indication; the details of each are as follows:

### 1 STATUS indication

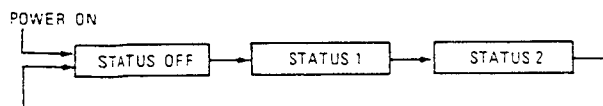
Various control switches and their settings are indicated by characters.

There are two display screens, which can be selected using the DISP SELECT button.



DISP SELECT button

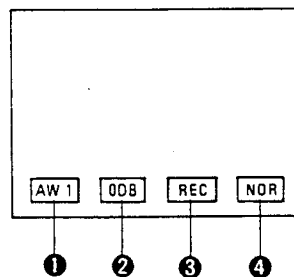
The DISP SELECT button is a push-button switch, which changes as follows every time it is pressed.



The STATUS OFF indicates no-indication state, to which setting the display is always initialized when the operation switch is switched ON from OFF.

### STATUS 1 indication

The following display appears in STATUS 1 mode.



#### 1 Position indication of the W.BAL switch

##### PRE:

Indicates that the W.BAL switch is set to the "PRESET" position. The white balance of the camera is set to the preset (3200K) state and the auto setup function cannot be activated.

##### AW 1:

Indicates that the W.BAL switch is set to the "AUTO 1" position. The white balance of the camera is set to the balance which is held in the "AUTO 1" memory of the camera.

If the auto setup adjustment is made while this is indicated, the white balance will be automatically adjusted and the balance at this point will be rewritten to the AUTO 1 memory.

##### AW 2:

Indicates that the W.BAL switch is set to the "AUTO 2" position. Just as in the above AUTO 1, the white balance of the camera is set to the balance stored in the "AUTO 2" memory. If the auto setup adjustment is made while this is indicated, the AUTO 2 memory will be rewritten.

\* For the auto setup adjustment, refer to page 26.

#### 2 Position indication of the HI-SENS switch

**0 DB:** Indicates that the HI-SENS switch is set to the "0 dB" position.

**9 DB:** Indicates that the HI-SENS switch is set to the "+9 dB" position.

**18 DB:** Indicates that the HI-SENS switch is set to the "+18 dB" position.

#### 3 Indication of the VTR mode

**STD BY:** Indicates that the VTR is in the ST-BY mode.

**REC:** Indicates that the VTR is in the REC mode.



#### ④ Electronic shutter speed indication

**NOR** : Indicates that the shutter speed is set to 1/60 sec.  
(U-Version)/1/50 sec (E-Version)

**250** : Indicates that the shutter speed is set to 1/250 sec.

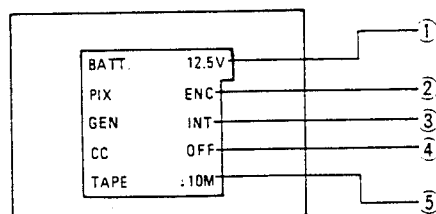
**500** : Indicates that the shutter speed is set to 1/500 sec.

**1000** : Indicates that the shutter speed is set to 1/1000 sec.

\* For changing the electronic shutter speed, refer to page 29.

#### STATUS 2 indication

The following display appears in the STATUS 2 mode.



##### ① Battery voltage indication

The battery voltage will be indicated digitally.

##### ② Signal indication of TEST OUT/VF OUT

The type of video signal appearing at the camera's TEST OUT terminal and viewfinder screen is indicated.

**PIX ENC** : The encoder output (Composite) signal is output.

**PIX R** : The red signal is output.

**PIX G** : The green signal is output.

**PIX B** : The blue signal is output.

##### Note:

- The camera is factory-preset to the "PIX ENC" position. To obtain another signal output, change the setting of the "PIX SELECT" switch inside the camera.
- When the foregoing PIX R, PIX G or PIX B signal is output, the signal does not have a color component. Therefore, even if it is connected to a color monitor, it appears as a monochrome signal on the screen.

#### ③ GENLOCK mode indication

Indicates the genlock mode of the camera.

**GEN INT** : Operates by the internal SSG (sync signal generator) of the camera (INT mode).

#### ④ Contour indication

**CC ON** : The contour compensation is being made.

**CC OFF** : The contour compensation is not being made.

\* To switch ON or OFF the contour compensation, use the internal switch.

#### ⑤ Remaining tape indication

When the amount of remaining tape in the VTR becomes low, the remaining time is indicated.

**TAPE ↓ 10M** : When the tape remaining time becomes less than 10 minutes, this is indicated.

\* When the remaining tape time is 10 minutes or more, nothing is indicated.

#### ② MODE indication

The execution mode during the auto setup adjustment will be indicated.

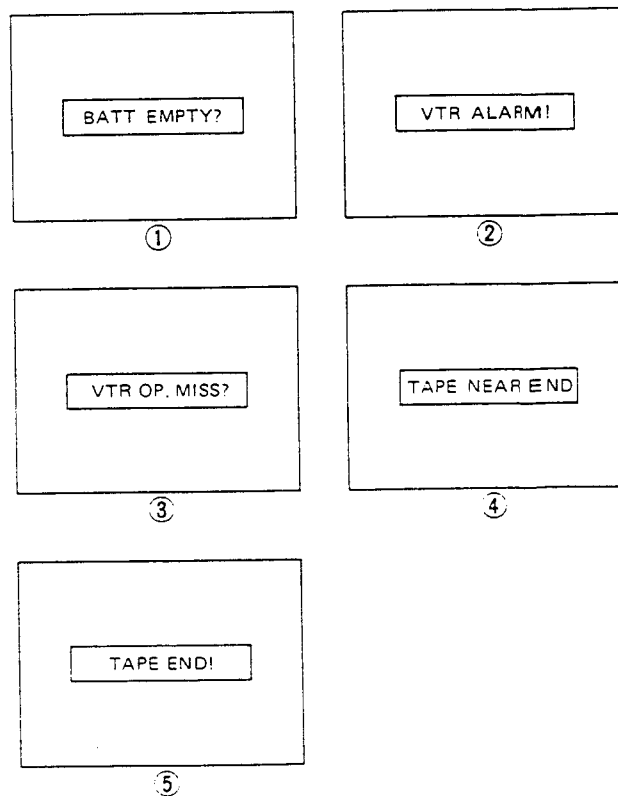
When the auto setup button is pressed, if the status indication is displayed, it will disappear, and replaced by the mode indication.

Upon completion of the auto setup operation, the results will be indicated for about 4 seconds, then the original status indication will be resumed.

For the details of the execution mode indication, refer to "auto setup adjustment" on page 26.

#### ③ Warning display

When the VTR or camera malfunctions, the display indicates the type of malfunction. This warning display has priority over other indications (STATUS or MODE). The following five indications are given.



##### ① **BATT EMPTY?** :

This display appears when the battery is becoming low. As soon as possible after this display appears, replace the battery with a charged one.

##### ② **VTR ALARM!** :

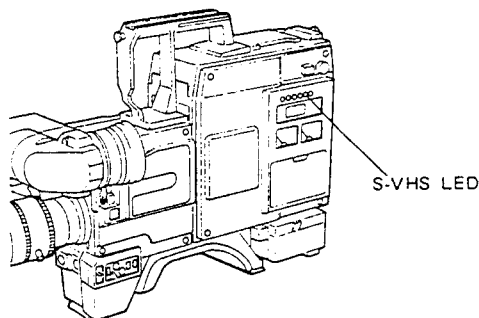
This display appears when there is an abnormality in tape running or when moisture has condensed on the head drum.

##### ③ **VTR OP. MISS?** :

This display appears when the VTR is not recording properly after the VTR button on the front panel or lens unit of the camera has been pressed. Possible causes for this are as follows (check each possible cause).



- A regular VHS cassette is inserted in the S-VHS mode. Check the cassette tape. The S-VHS LED will blink in this case.



- The VTR has not been engaged in the record-pause mode.  
First set the VTR to the record-pause mode.
- The STOP button on the VTR was pressed, instead of the VTR button on the camera, during recording.

④ **TAPE NEAR END** :

This display appears during recording when the remaining tape length is less than three minutes. To continue recording, a new tape should be inserted.

⑤ **TAPE END!** :

This display appears when the tape is coming to an end during recording. With this indication, the VTR automatically enters the stop mode, warning that recording is possible only with a new tape.

## TROUBLESHOOTING

- Auto setup or auto white balance adjustment cannot be completed.
  - Is the filter turret correctly set?
  - Is the subject you are shooting a colored object?
- Auto setup or auto white balance adjustment cannot be performed.
  - No display appears in the viewfinder screen.
  - Are you pressing the RET button on the lens?
  - Is the camera's RET switch set to ON?
  - Are you monitoring the VTR playback picture?
- Viewfinder screen is darker, or no raster appears.
  - Scenes being shot are not visible in the viewfinder.
  - Are the viewfinder's contrast and brightness controls set properly?
  - Is the filter turret correctly set? Is the lens iris closed?
  - Is the camera's RET switch set to ON?

## SPECIFICATIONS

### Color Video Camera KY-R25

#### Camera head

Image pickup device	: 2/3-inch interline CCD x 3 (R, G, B)
Color separation optical system	: 3-color separation prism
Effective number of pixels	: U-Version 728(H) x 493(V), 360,000 pixels E-Version 728(H) x 587(V), 430,000 pixels

#### Color system

U-Version	: NTSC (R-Y, B-Y method encoder)
E-Version	: PAL (R-Y, B-Y method encoder)

#### Synchronizing system

Internal (built-in SSG)

#### Lens mount

: 2/3" Bayonet

#### Optical filter

: 3200K, 5600K, 5600K + 12.5 % ND

#### Sensitivity

: f5.6, 2,000 lux

#### Practical minimum illumination

: f1.7 23 lux (+18 dB)

#### Sensitivity selection

: +9 dB, +18 dB

#### S/N ratio (standard)

: U-Version  
60 dB typical (contour correction OFF, gamma 1, bandwidth 4.2 MHz, Matrix OFF)  
E-Version  
58 dB typical (contour correction OFF, gamma 1, bandwidth 5 MHz, Matrix OFF)

#### Horizontal resolution

: Typical 700 TV lines (Y channel)  
530 TV lines (R, G and B each channel signal)

#### Registration

: Zone 1: 0.05 % or less (circle 80 % of picture height)  
Zone 2: 0.05 % or less (circle of picture width)  
Zone 3: 0.05 % or less (zone outside the above)

#### Contour correction

: Horizontal: dual-edged  
Vertical: 2H (with comb filter)

#### Video signal output

##### 50-pin connector

: Composite video signal (VBS);  
1 Vp-p, Separate Y/C signals (compatible with S-VHS) or  
Component signal (Y/R-Y/B-Y)

##### Test output terminal

##### (50-pin connector)

: Composite video signal (VBS):  
1 Vp-p (any one of R, G, or B signal can be selected using the internal select switch <PIX SELECT>)

#### Audio signal output

: -52 dBm, 600 ohm balanced, -20 dB unbalanced (switchable), monaural or stereo output depending on the microphone used

#### Audio monitor output

: Pin jack, 8 ohm, -20 dB

#### Mic input signal

: 6P/XLR-3, -52 dBm, 600 ohm (balanced when low signal is output and unbalanced when high signal is output)

#### Electronic shutter speeds

: \*1/60 (normal), 1/250, 1/500, 1/1000 (switchable) (\*E-Version: 1/50)



Power source : 12 V DC (10.5 to 15 V)  
 Current consumption : 1.4A (including the viewfinder VF-P10)  
 Operating temperature range : -5°C to +45°C  
 Weight : 2.4 kg (without VF-P10)

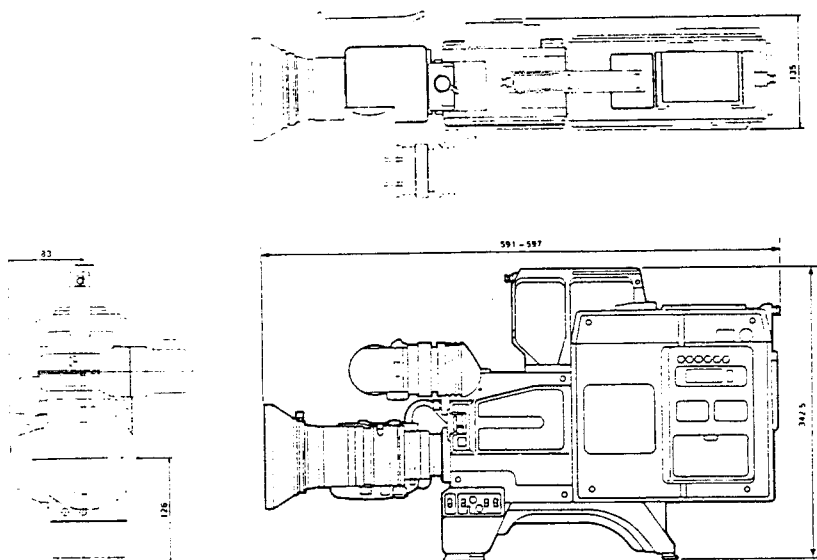
#### Viewfinder VF-P10

Input signal : Composite video signal 1 Vp-p (high input impedance)  
 CRT : 1.5-inch diagonal 40LB4  
 Resolution : 400 lines or more  
 Indication function : Tally/top tally (can be switched off) and inside REC lamp  
 Warning/battery (camera power supply) drop, LOW-L (video output) drop  
 VTR tape end, abnormal indication  
 Power consumption : 12 V DC, 250 mA  
 Operating temperature range : -20°C to +50°C  
 Weight : 650 g

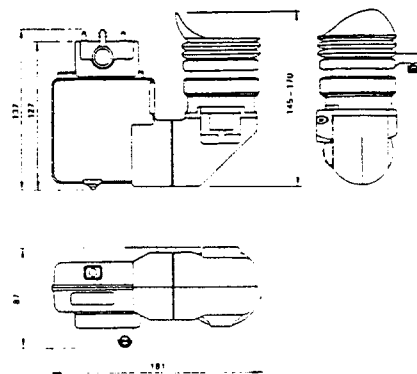
*Design and specifications subject to change without notice.*

#### • Dimensions (Unit: mm)

KY-R25 (with Video Recorder BR-S410 and Lens HZ-516B)



#### VF-P10





## KA-20 CAMERA ADAPTER

(Exclusive camera adapter for KY-R25 Color Video Camera)

- KA-20 is a Camera Adapter designed to attach a separate type VTR to the KY-R25 color video camera.

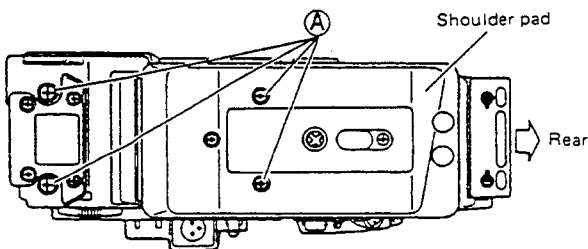
### PRECAUTIONS

- KA-20 Camera Adapter is for the exclusive use of the KY-R25 color video camera, and it cannot be adapted to any other camera.
- To set the two units of KA-20 and KY-R25, the optional carrying handle KA-231 is necessitated.

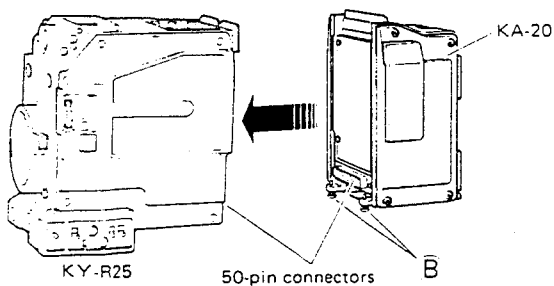
### INSTALLATION

- In the case the VTR and carrying handle are attached to the KY-R25 video camera, remove them first referring to the article "VTR Installation" in the instruction book of KY-R25.

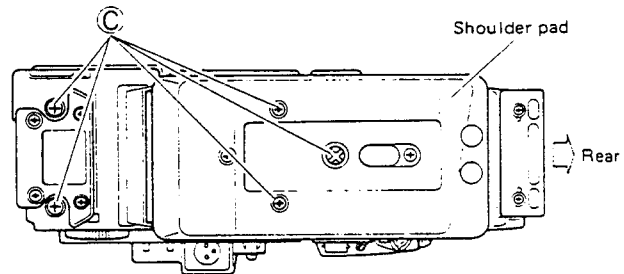
1. The illustration below shows the bottom view of the shoulder pad mounted to the KY-R25. Loosen four screws (A) with a philips screwdriver. Then remove the shoulder pad.



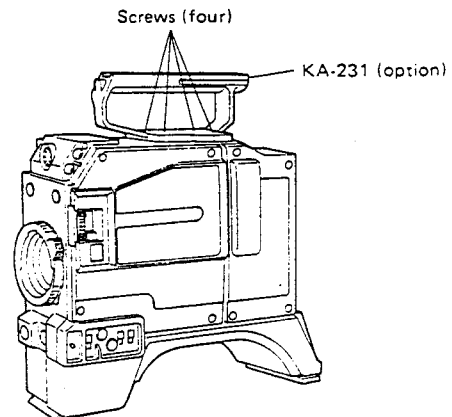
2. Attach KA-20 to KY-R25's rear side by connecting their 50-pin connectors correctly. Turn two screws (B) clockwise with philips screwdriver to secure KA-20.



3. Attach the shoulder pad to the camera head. Turn five screws (C) clockwise with philips screwdriver to secure the shoulder pad.



4. Attach the optional carrying handle KA-231 to the top of the camera head with four screws provided with KA-231. See the figure below.



### SPECIFICATIONS

Weight : 620 g  
Dimensions : 114(W) x 160(H) x 89(D) mm

Design and specifications are subject to change without notice.

### NOTE

Camera adapter KA-20  
Shoulder pad KA-220  
Viewfinder VF-P10  
Tripod base KA-500X  
Carrying handle KA-231  
Carrying handle KA-232  
Carrying case CB-P410

Although model names KY-17 and KY-25 are not stated in the instruction manuals of the above accessories for the KY-17/25 series, the above accessories can be connected to both KY-17/25 series as well as KY-15/20 series cameras.



No. 60018

# **JVC** Service Manual

For remaining sections of this booklet contents the servicing instructions.  
Following sections are for use by qualified personnel only.



**MODEL KY-25/KY-R25**



## TABLE OF CONTENTS

**WARNING:**

THE REMAINING PORTION OF THIS TABLE OF CONTENTS LISTS THE SERVICING INSTRUCTIONS. FOLLOWING SECTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY.

Section	Title	Page
	Important Safety Precautions	
[1.	INSTRUCTIONS (Top of page) .....	1 - 1]
2.	DISASSEMBLY .....	2 - 1
3.	ADJUSTMENT PROCEDURE .....	3 - 1
4.	REPACKINGS .....	4 - 1
5.	EXPLODED VIEWS AND PARTSLIST .....	5 - 1
6.	CHARTS AND DIAGRAMS .....	6 - 1
7.	ELECTRICAL PARTS LIST .....	7 - 1





## SECTION 2 DISASSEMBLY

### 2.1 FUSE REPLACEMENT

- KY-R25 doesn't have any fuse. When replace the fuse, refer to the VTR's service manual.

Before replacing a fuse, the reason why it blew should be investigated to prevent trouble from spreading. The malfunction should be repaired before replacing the fuse.

(1) Before replacing the fuse, set the Power switch to OFF.

(2) Fuse is built in the KA-20 camera adapter.

(3) Remove the right side cover as shown in Section 2.7.

(4) Remove the GL board, then replace the new fuse.

Note: Refer to 2.7 Removing the side cover and 2.8.1 of Removing the GL board.

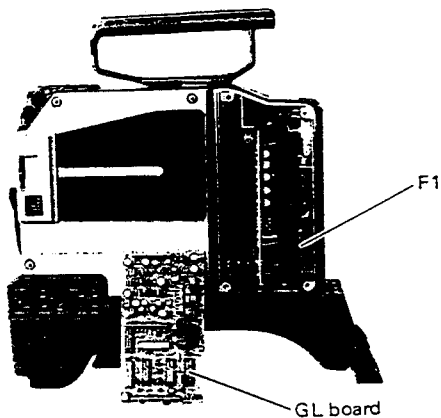


Fig. 2-1

For the protection of the camera and for your safety, replace with a fuse with the specified part number.

USA and Canada : QMF51U1-2R5; 2.5 A, 125 V  
Europe : QMF51A2-2R5; T2.5 A, 250 V

### 2.2 REMOVAL OF CAMERA ADAPTER

- (1) Remove four screws ① fixing the top handle and remove the handle.

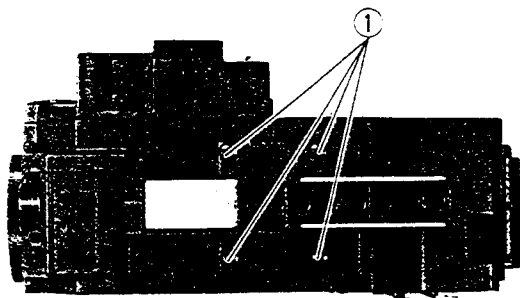


Fig. 2-2

- (2) Remove five screws ② and the shoulder pad KA-220 if provided.

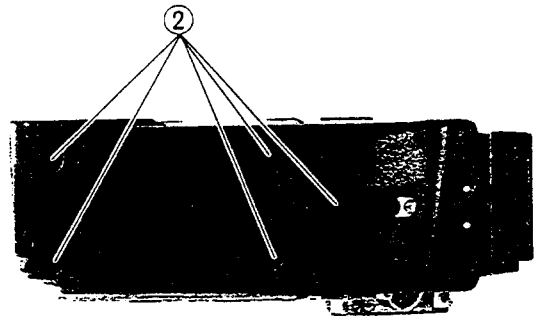


Fig. 2-3

- (3) Loosen two screws ③ on the bottom. (Do not remove them.)

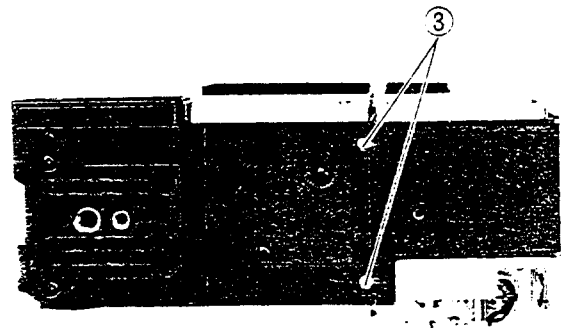


Fig. 2-4

- (4) Pull the adapter backward to remove it.

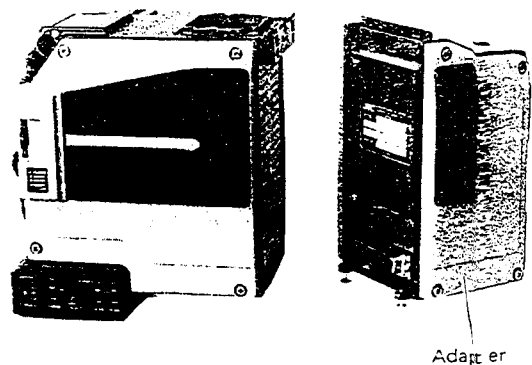


Fig. 2-5



## 2.3 REMOVING THE SIDE COVERS

### (1) Left side cover:

Loosen four screws ④. (Do not remove them.)

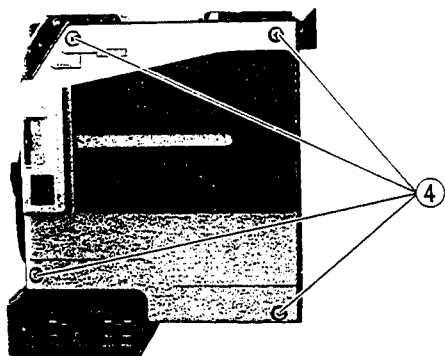


Fig. 2-6

### (2) Right side cover:

Loosen four screws ⑤. (Do not remove them.)

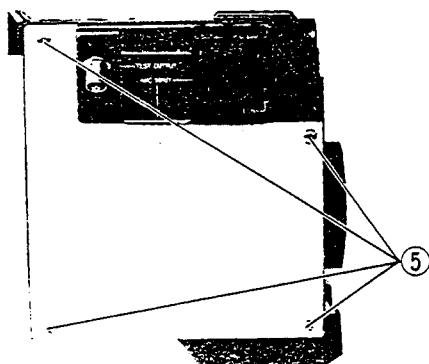


Fig. 2-7

## 2.4 REMOVING THE OPTICAL FILTER DISC

(1) Remove the left side cover as described in 2.3 (1).

(2) Loosen two screws ⑥. (Do not remove them)

(3) Hold the upper and lower sides of the filter holder with your fingers and pull it out.

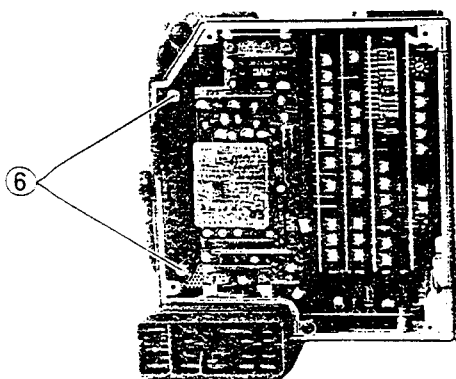


Fig. 2-8

## 2.5 REMOVAL OF PRINCIPAL CIRCUIT BOARDS (CAMERA HEAD)

### 2.5.1 Removing the plug-in circuit board

The circuit boards named PR-1, PR-2, SE and CP which are located on the bottom rail are to be removed using the board remover tool (SC41039) used for the former KY series camera.

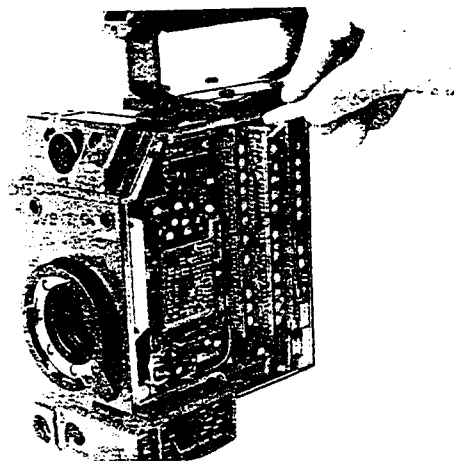


Fig. 2-9

### 2.5.2 Removing the CC board

Remove four screws ⑦ and take out the CC board.

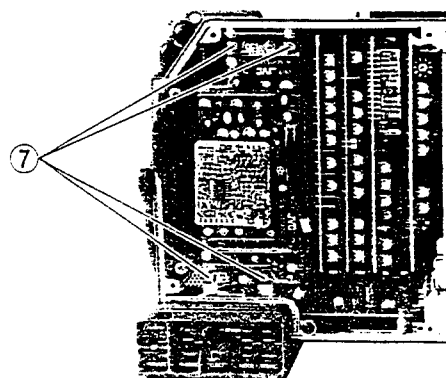


Fig. 2-10



### 2.5.3 Removing the PP board

- (1) Remove two screws (8).
- (2) Remove a connector (A) and slide the PP board toward right (⇒) to remove.

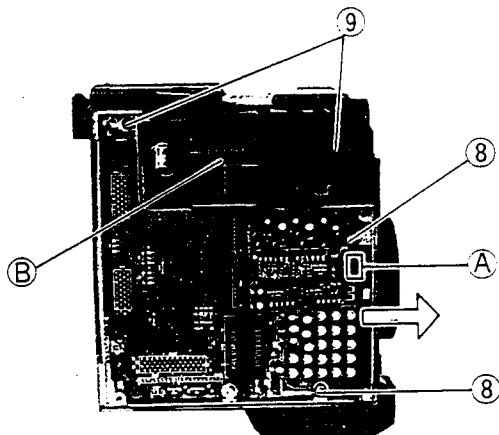


Fig. 2-11

### 2.5.4 Removing the AU board

- (1) Remove two screws (9) which secure microphone amp block (B) on the frame. (refer to Fig. 2-11)
- (2) Remove a connector (B') and take off the block.

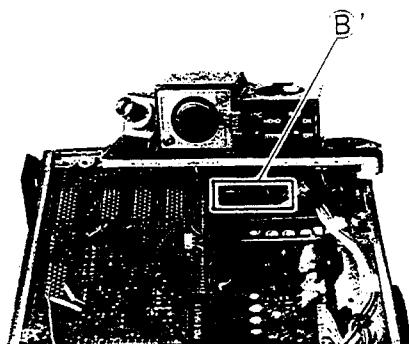


Fig. 2-12

- (3) Remove two screws (10) on the block, then, remove the AU board.

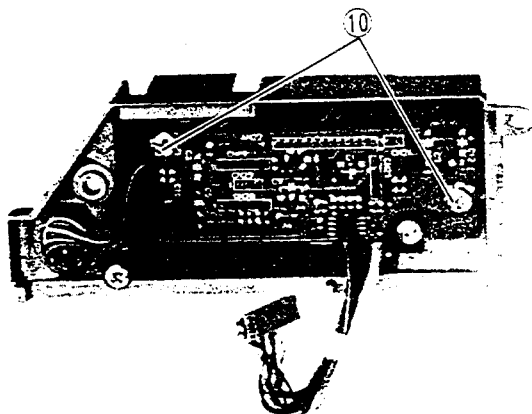


Fig. 2-13

### 2.5.5 Removing the MT board

- (1) Remove the Plug-in boards and microphone amp block. (Refer to Section 2.5.4 (1), (2).)
- (2) Remove the PP board. (Refer to Section 2.5.3.)
- (3) Remove four screws (11) on the MT board.

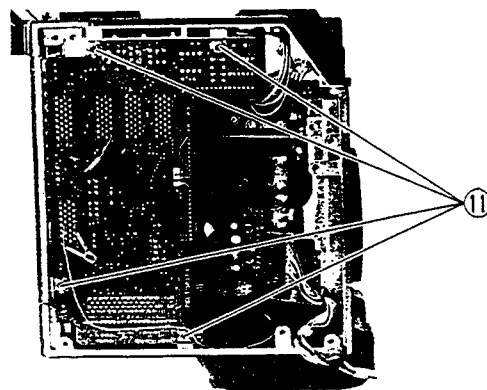


Fig. 2-14

- (4) Remove a screw (11') and take out the slide rail (C).
- (5) Remove the connector CN27 (D).

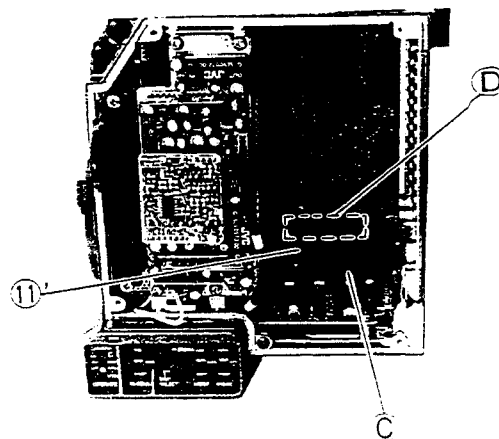


Fig. 2-15



### 2.5.6 Removing the PS board

- (1) Remove the MT board as shown in 2.5.5.
- (2) Remove a screw ⑫ and stud screw ⑬.

**Note:** Bottom cover can be removed if the power transistor check is required.

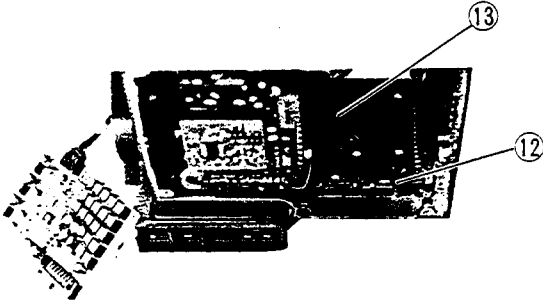


Fig. 2-16

### 2.5.7 Removing the SW board

- (1) Remove two screws ⑭ which fixing the CC board and remove a screw ⑭'.

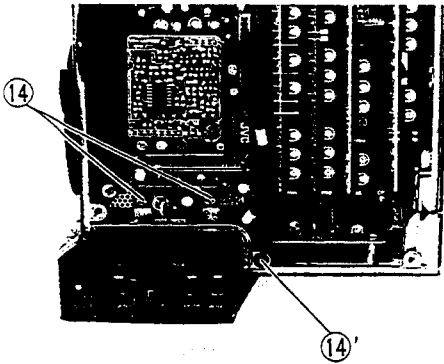


Fig. 2-17

- (2) Remove a screw ⑮ on the bottom.

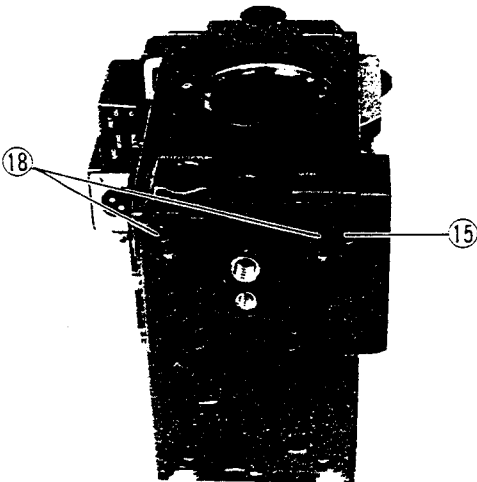


Fig. 2-18

- (3) The switch panel can be pulled out together with the switch and SW board.
- (4) Remove two screws ⑯.

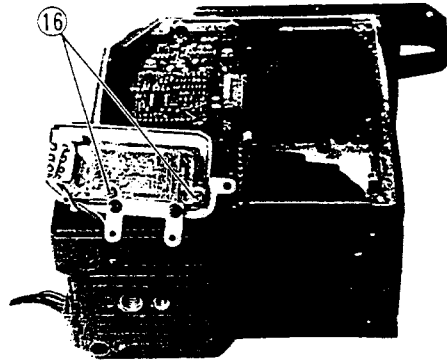


Fig. 2-19

## 2.6 REMOVAL OF OPTICAL BLOCK

### 2.6.1 Removing the optical assembly

- (1) Remove top two screws ⑰ and two screws ⑱ (shown in Fig. 2-18) as the front panel is fixed on the optical block.

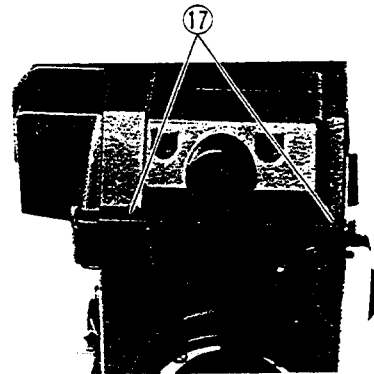


Fig. 2-20

- (2) Remove a screw ⑲ on the PP board

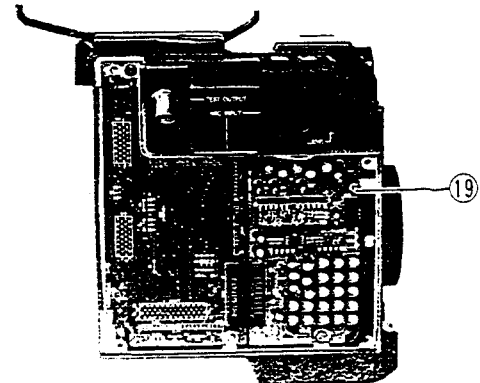


Fig. 2-21



- (3) Remove the connector (E) on the CC board.

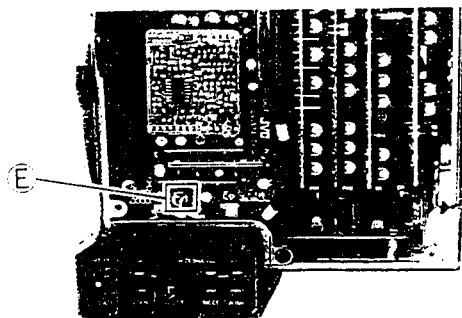


Fig. 2-22-a

- (4) Remove the Plug-in boards (Refer to the section 2.5.1) and remove the connector (E)' on the MT board.

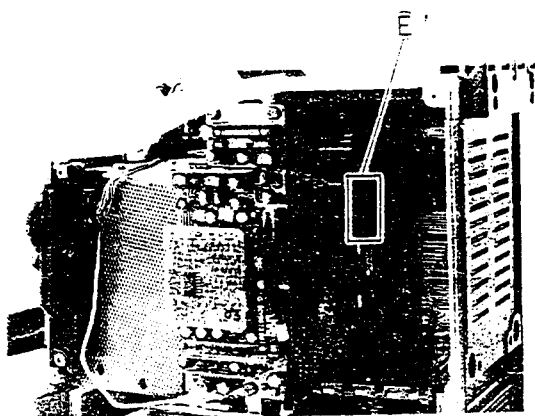


Fig. 2-22-b

- (5) Take the optical block assembly out of the camera frame. Ensure the shield case may not damage the PWBs or wiring.

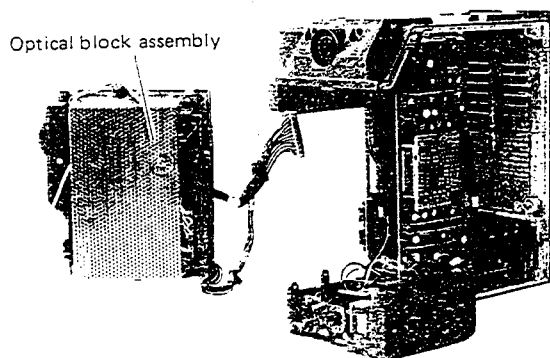


Fig. 2-23

## 2.6.2 Removing the image process boards

### 1. Removing the SA board

- (1) Remove two screws (20) then remove the SA board.

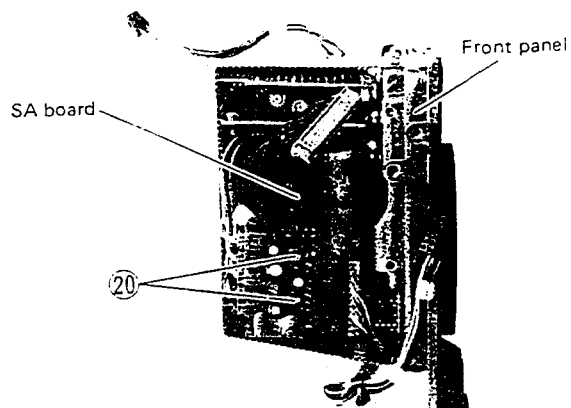


Fig. 2-24

### 2. Removing the DR board

- (1) Remove five screws (21) which are fixing the shield case (G).  
(2) Remove the shield case (G).

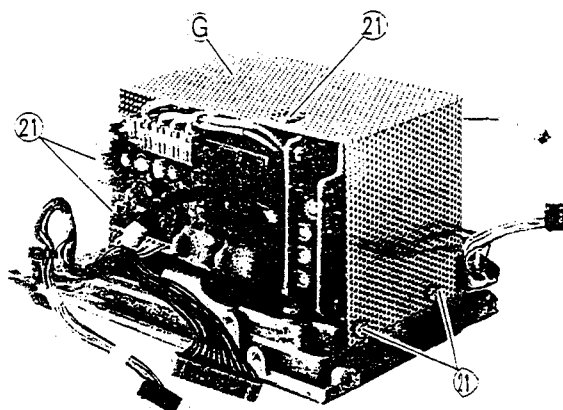


Fig. 2-25

- (3) Remove two screws (22) on the DR board.

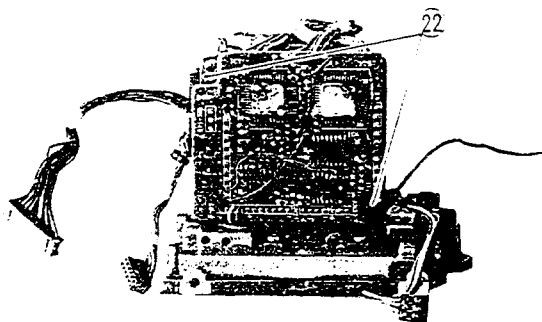


Fig. 2-26

Note: IS boards are fixed as a combination with CCD. They could be removed from the CCDs as they are connected with socket. However, removing the IS board is not recommended to prevent connection error or unstable contact.



### 2.6.3 Replacing the CCD assembly

(1) Remove four screws (23) and the front panel (H) .

**Note:** The CCD can not be replaced independently. Replace it with optical block assembly.

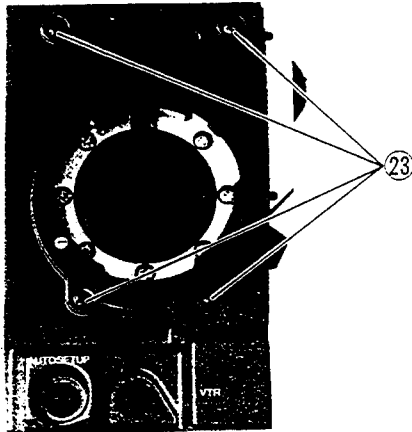


Fig. 2-27

(2) The SA, DR boards and front panel are not assembled on the replaced optical block.

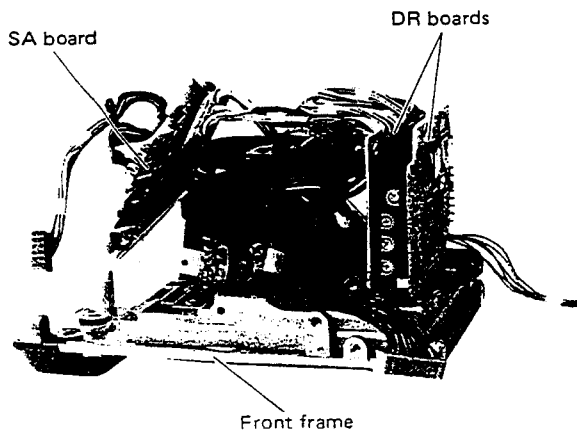


Fig. 2-28

(3) Assemble those on the new optical block removed from the former unit.

### 2.7 REMOVAL OF SIDE COVERS (KA-20 ADAPTER)

Loosen four screws (1). (Do not remove them.)

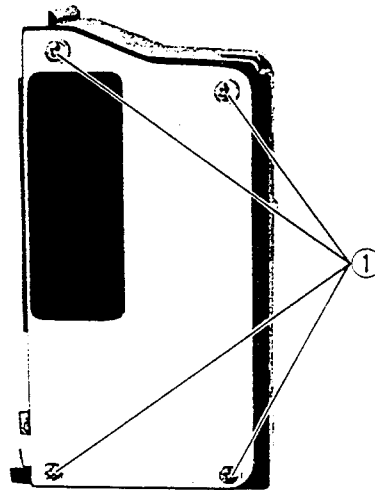


Fig. 2-29

### 2.8 REMOVAL OF CIRCUIT BOARDS (KA-20 ADAPTER)

#### 2.8.1 Removing the plug-in circuit boards

Hold the board by the top and bottom, then, pull the board outward.

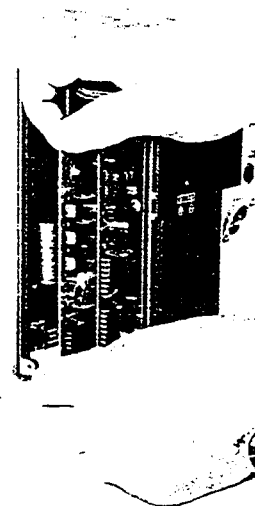


Fig. 2-30



## 2.8.2 Removing the MT-2 board

- (1) Remove three screws ②.

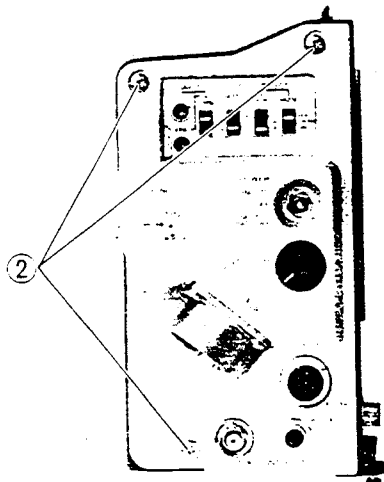


Fig. 2-31

- (2) Remove the connector ①.

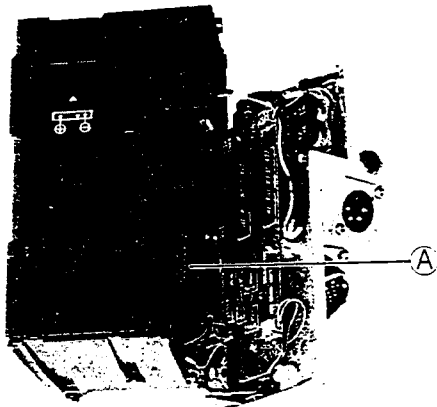


Fig. 2-32

- (3) Remove two screws ③.

Pull out the MT-2 board to access to the connectors.

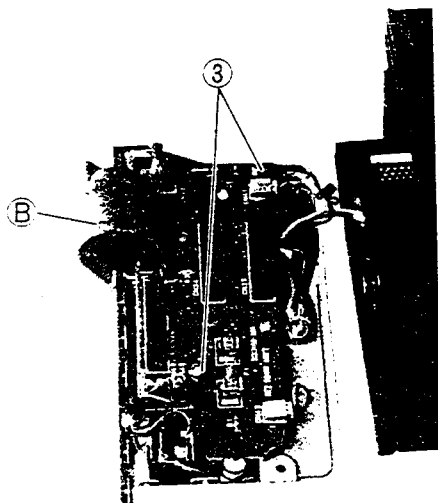


Fig. 2-33

- (4) Refer to the FPC connector ① removal below.  
Note for conductors side on both of card cable and connector to mate.

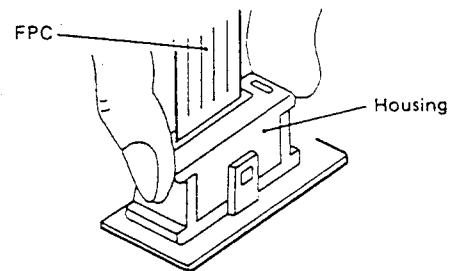


Fig. 2-34

## 2.8.3 Removing the CT board

- (1) Remove the MT-2 board as shown in Section 2.8.1 and 2.8.2.

- (2) Remove three screws ④.

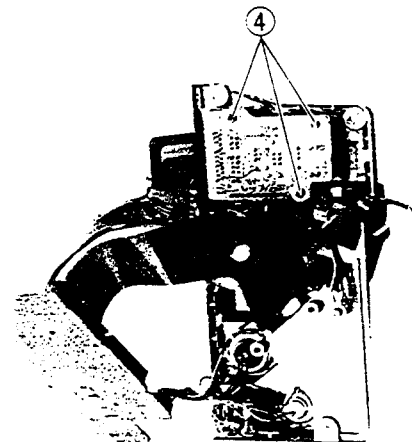


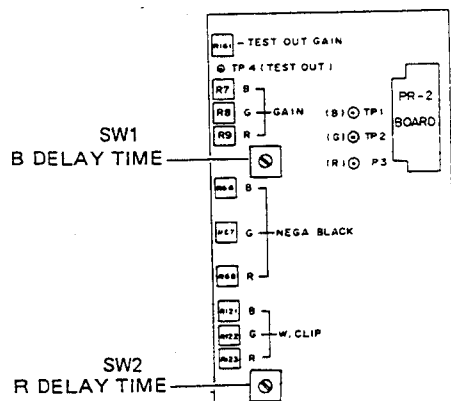
Fig. 2-35



## 2.9 FUNCTIONS OF SWITCHES INSIDE CAMERA

Each function of the switches built in the camera (on the PR2, SE, CP and MT boards) is as follows.

### 2.9.1 Switches on PR2 board



#### 1. R/B DELAY TIME switches (SW1, SW2)

SW1 and SW2 are adjusting switches for delay amount of R/B signal. Usually, adjustment by these switches is not required.

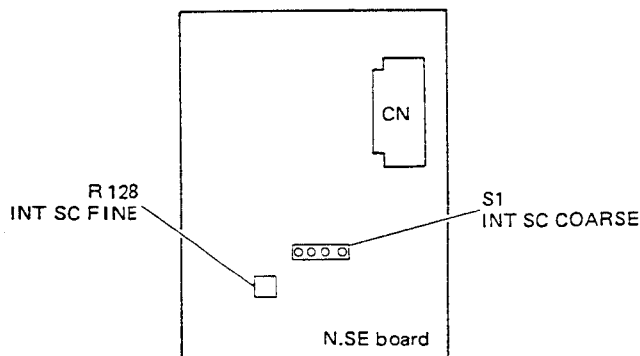
• Don't touch these switches.

#### 2. MATRIX ON/OFF switch connector (S3)

S3 is the connector of the MATRIX ON/OFF switch. Ideal spectral composition includes respective negative components corresponding to R, G and B colors, however the practical spectroscopic system excludes negative components and such errors are compensated by the color matrix circuit which is activated by setting this switch to "ON".

• Setting position at shipment : "ON"

### 2.9.2 Switch on SE board (NTSC type only)

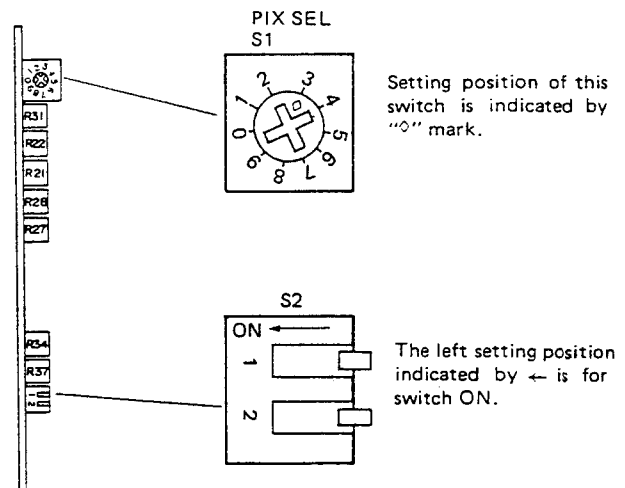


#### 1. INT SC COARSE switch (S1)

The INT SC COARSE switch (S1) and the INT SC FINE volume control (R128) on the SE board (only in the NTSC type) are prepared to adjust SC signal generated by the built-in SSG. In usual, adjustment by S1 and R128 is not required.

• Don't touch them.

### 2.9.3 Switches on CP board



#### 1. PIX SEL switch (S1)

This is a selector switch of signals to be outputted to the TEST OUTPUT connector and to the viewfinder. According to the setting position of this switch, output signal is selected as follows.

Setting position	0	1	2	3	4-9
Output signal	R	G	B	ENC (composite)	None

• Setting position at shipment : "3"

#### 2. CHECK switch/CC switch (S2-1, S2-2)

These switches are prepared for adjustments and check-up of the automatic operation (AUTO WHITE, AUTO BLACK, AUTO IRIS, etc.) with the CPU set to the check mode as well as for turning on/off the contour collector. According to setting positions of these switches, the mode is shifted as follows.

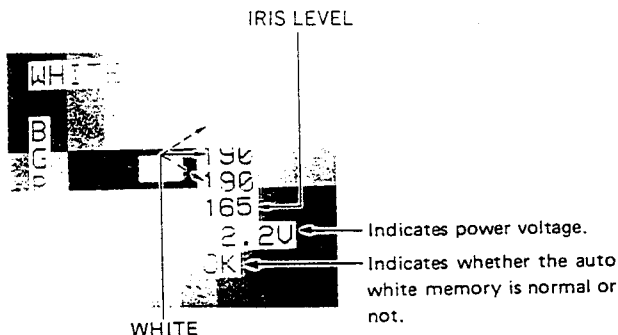
	Switch position		Mode	
	1 (upper)	2 (lower)		
①	OFF	ON	Normal mode	Contour "ON"
	OFF	OFF		Contour "OFF"
②	ON	OFF	Check mode	for adjusting AUTO WHITE/IRIS
③	ON	ON		for adjusting AUTO BLACK

##### ① Normal mode (Switch "1" is OFF)

By turning ON/OFF the switch "2", the contour collector can be turned on/off.

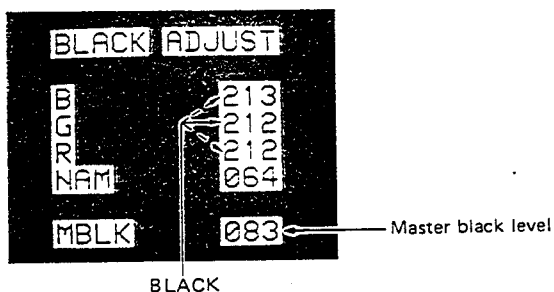


- ② AUTO WHITE/AUTO IRIS adjusting/check mode  
Indication in the viewfinder is as shown below.  
In practical adjustment, refer to the Section 3 "Electrical Adjustment".



\* Respective values of B, G, R and NAM don't indicate voltage but are mere indexes for convenience.

- ③ AUTO BLACK adjusting/check mode  
Indication in the viewfinder is as follows.  
In practical adjustment, refer to the Section 3 "Electrical Adjustment".



\* Respective values don't indicate voltage but are mere indexes for convenience of the CPU.

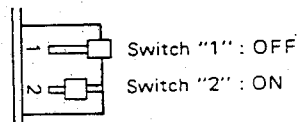
**Notes:**

In the check mode, the camera comes in the following condition.

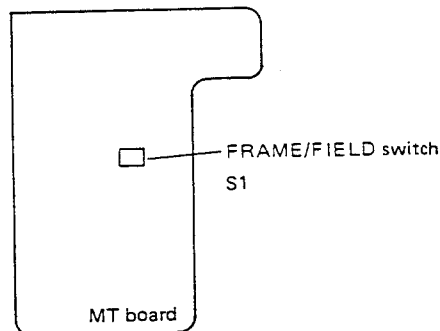
- 1) When the IRIS MODE switch of the lens is set to "AUTO", the iris is fixed (around f 5.6).
- 2) AUTO SETUP and AUTO WHITE BALANCE adjustments are impossible.
- 3) Display in the viewfinder is for the check mode, and it cannot be changed to another display by the DISP. SELECT switch.

If the switch "1" is once turned ON (to set to the check mode), contents of the auto white balance memory (AUTO 1, AUTO 2) are erased and the color temperature is initialized to the preset value even after the switch "1" is turned OFF (to set to the normal mode).

- Setting position at shipment  
(Normal mode, Contour ON)



#### 2.9.4 Switch on MT board



1. FRAME/FIELD READOUT SELECTOR switch (S1)  
To select reading mode of signal from the CCD.  
Position "1" : For FRAME READOUT mode  
Used to pick up still objects. In this mode the vertical resolution of the camera is improved.  
Position "2" : For FIELD READOUT mode  
Used to pickup moving pictures.

- Setting position at shipment : Position "2"

#### 2.9.5 Function of switches built in adapter

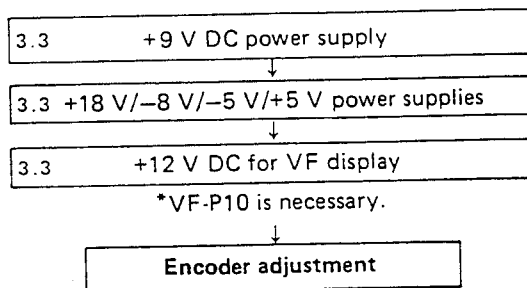
For these switches, refer to the item 1 "Circuit Description" of the "Camera Adapter KA-20" to be described later.



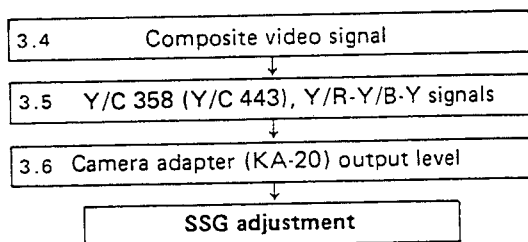
## SECTION 3 ELECTRICAL ADJUSTMENT

### 3.1 FLOWCHART OF ELECTRICAL ADJUSTMENT

#### 1. Adjustment and checkup of power supply



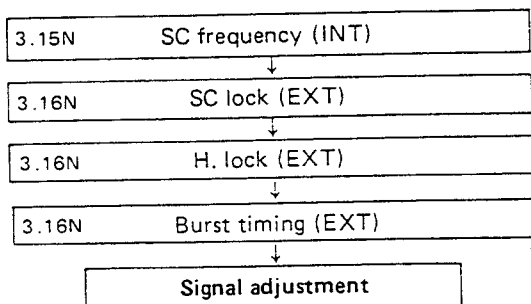
#### 2. Encoder adjustment



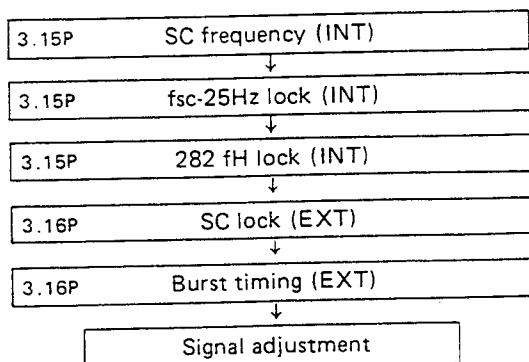
#### 3. Adjustment of SSG (Reference signal generator)

**Note:** This adjustment is not required generally.  
Proceed to "Signal adjustment" of the next.

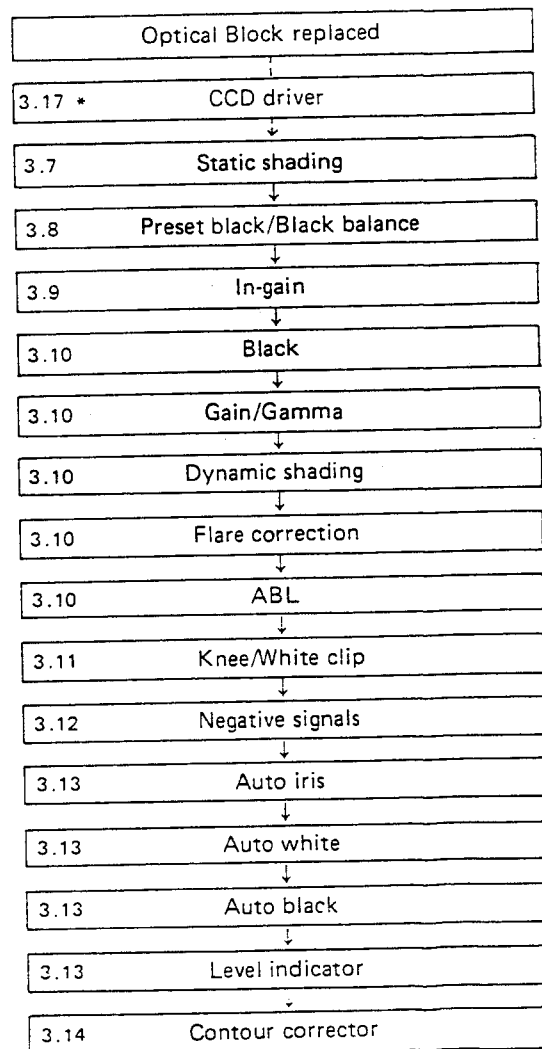
##### •NTSC



##### •PAL



#### 4. Signal adjustment



\* CCD DRIVER adjustment is unnecessary at ordinary servicing. (include optical Block replacing)

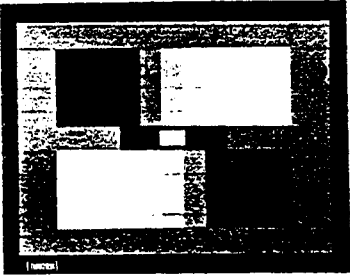
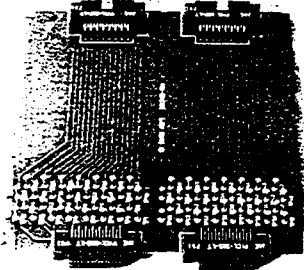

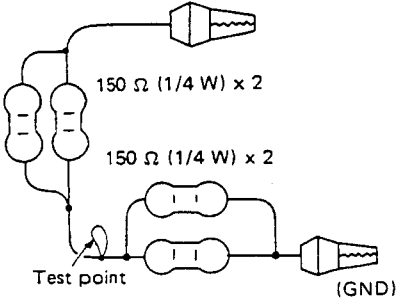
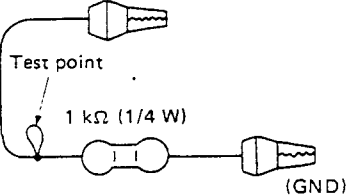
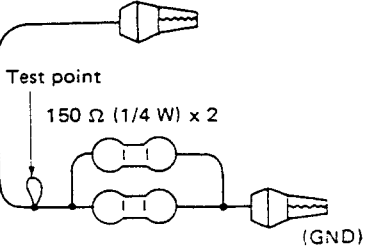


## 3.2 REQUIRED EQUIPMENT AND STANDARD SETUP FOR ELECTRICAL ADJUSTMENT

### 3.2.1 Necessary equipment and instruments

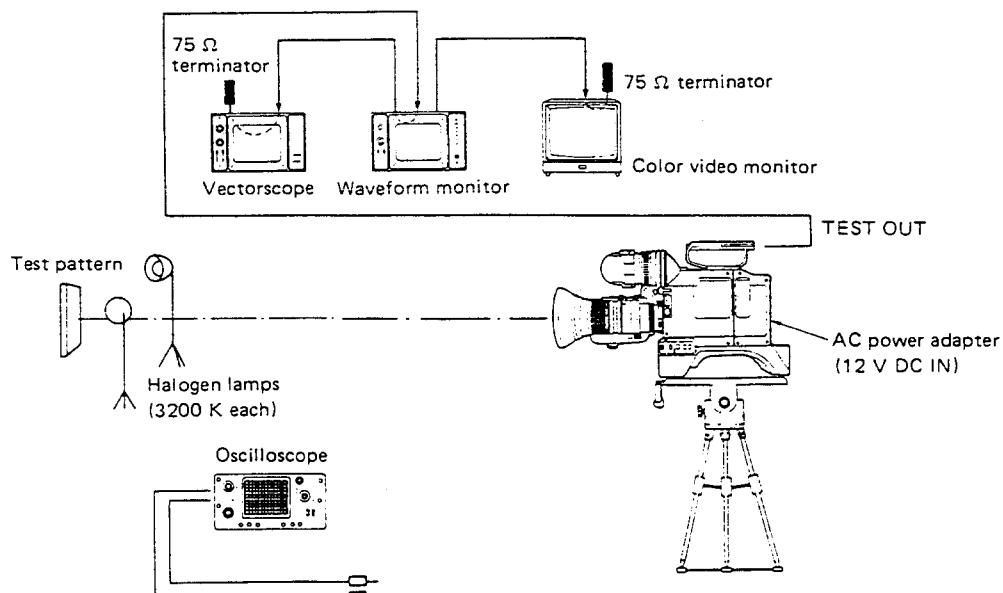
1. Lighting appliance (Halogen lamps - 3 200 K)
2. DC voltmeter (digital voltmeter is preferable)
3. Oscilloscope (dual-trace type is preferable)
4. Frequency counter
5. Color video monitor
6. Waveform monitor
7. Vectorscope
8. Tripod base (KY-25 accessory or KA-500X)
9. Regulated power supply : 12 V DC (AC power adapter, etc.)
10. Lens: HZ-516B or equivalent

### 3.2.2 Required devices and jigs

1	Grey scale chart (GS-2L)	2	Extension board 60 P (SCK2169-00A)	3	Board extractor (SC41039-001)
  					
4	75Ω/75Ω terminator A	5	1 kΩ terminator	6	75 Ω terminator B
  					

**Note:** Prepare the terminators (items 4, 5 and 6) by yourself.

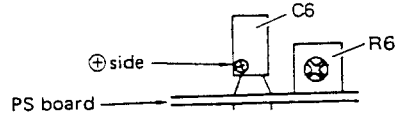
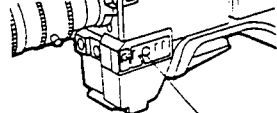
### 3.2.3 Standard setup and connection





No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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### 3.3 ADJUSTMENT OF POWER SUPPLY VOLTAGES

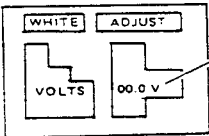
1	+9 V DC power supply	Digital voltmeter	⊙ C6 (⊕side) [PS board] ⊕ +9 V ADJ (R6) [PS board] ☆ +9 V DC	• Adjust R6 to obtain the specified voltage. 
2	+18 V -8 V -5 V +5 V power supplies	Digital voltmeter	⊙ AN16 pin 8 [MT board] ☆ +18 V DC ----- ⊙ AN16 pin 9 [MT board] ☆ -8.5 V DC ----- ⊙ AN16 pin 10 [MT board] ☆ -5 V DC ----- ⊙ AN16 pin 11 [MT board] ☆ +5 V DC	• Check up the specified value for every power supply of this item.
3	+12 V DC for viewfinder display	Digital voltmeter	CP board → Extension board connected ⊙ TP60 [Extension board] ----- ⊙ Viewfinder display ⊕ 12 V DET (R37) [CP board] ☆ The 0.5 V up voltage more then TP60 voltage	Note: Viewfinder VF-P10 is necessary for this adjustment. • Confirm the voltage with a digital voltmeter. 1) Press the DISPLAY button to show the "STATUS 2" on the screen. 

\* This adjustment can be performed according to the following procedure.


1) Switch S2 on the CP board to change the mode to "WHITE ADJUST".

The switch S2  
 → 1 : ON (CHECK switch)  
 → 2 : OFF (CONTOUR switch)

2) In the above mode, voltage is shown on the screen under the title of "WHITE ADJUST" as shown below.



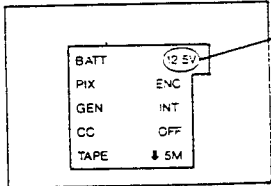
Voltage displayed



Standard setting of S2:  
 1 → OFF  
 2 → ON

Switch S2

2) Adjust R37 so the 0.5 V up voltage as confirmed at TP60 is displayed on the screen.




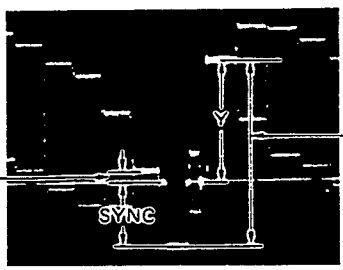


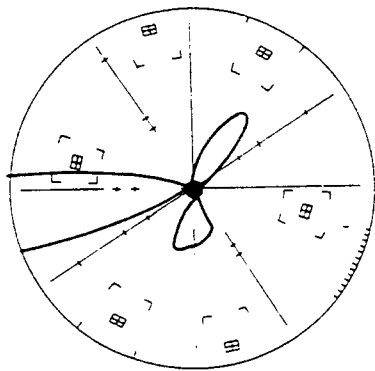
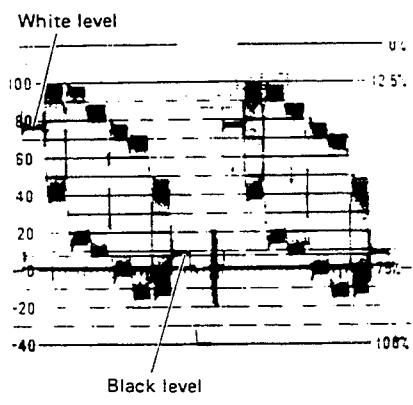
Voltage display



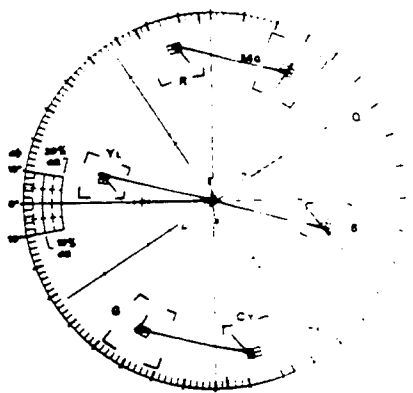
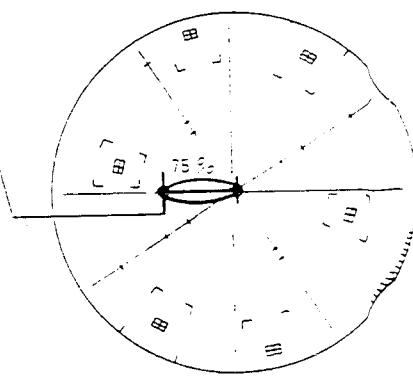
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure
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### 3.4-N ENCODER ADJUSTMENT - 1(Adjustment of composite signal) : NTSC

**Note:** If this adjustment is performed without a vectorscope, proceed the adjustment and checkup of the items only from No. 1 (Bar level adjustment) to No. 3 (Carrier balance adjustment).

1	Bar level	 <p>Oscilloscope (H-rate, 10 : 1) ↑ with 75 <math>\Omega</math>/75 <math>\Omega</math> terminator A (see 3.2.2)</p> <p>M. Y LEVEL (R19) SYNC LEVEL (R16)</p> <p>SE board</p>	<p>SE board → Use the Extension board for it.</p> <p>◎ TP6 [SE board] with 75 <math>\Omega</math>/75<math>\Omega</math> terminator A ① MASTER Y LEVEL (R19) [SE board] ☆ 0.55 Vp-p</p> <hr/> <p>① SET UP level (checkup only) ☆ 53 mVp-p</p> <hr/> <p>① SYNC LEVEL (R16) [SE board] ☆ 0.286 Vp-p</p>	<p><b>Note:</b> Measuring conditions:</p> <ul style="list-style-type: none"> <li>Filter disk → 1 (closed)</li> <li>CAMERA/COLOR BARs switch → BARS</li> <li>PIX SELECT switch [CP board] → 3 (ENC)</li> <li>Adjust for the specified values.</li> </ul>  <p>SETUP SYNC</p>
2	Test output level	 <p>TEST OUT GAIN (R161)</p> <p>PR 2 board</p>	<p>◎ TEST OUTPUT terminal (with 75 <math>\Omega</math> termination) ① TEST OUT GAIN (R161) [PR2 board] ☆ 0.835 Vp-p (level between Sync tip and Y peak)</p>	<ul style="list-style-type: none"> <li>Set for the specified value.</li> </ul>
3	Carrier balance	 <p>R-Y C BAL B-Y C BAL</p> <p>SE board</p>	<p>◎ TEST OUTPUT terminal (with 75<math>\Omega</math> termination) ① B-Y C BAL (R88) [SE board] ① R-Y C BAL (R89) [SE board] ☆ Minimum carrier leak</p>	<ul style="list-style-type: none"> <li>Minimize carrier leaks of white level and black level by turning C. BAL VRs (R88 and R89) alternately.</li> </ul> <div> <p>* Procedure with a vectorscope used</p> <ol style="list-style-type: none"> <li>Vectorscope's GAIN → Maximum</li> <li>Turn the C BAL VRs alternately to position the spots at the center of the screen.</li> </ol>  </div>  <p>White level Black level</p>



No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊙) Adjustment level (☆)	Adjustment procedure
4	Chroma level, etc.	Vectorscope	⊙ TEST OUTPUT terminal (with 75 Ω termination) ⊙ CHROMA OUT GAIN (R80) [SE board] ⊙ R-Y GAIN (R121) [SE board]	1) GAIN of vectorscope → CAL, or 75% (pre-set position) 2) Adjust VRs to set every spot (R, G, B, Mg, Cy, YL) at the specified point on the vector-scope's screen as shown below.
5	Quadrature		⊙ QUAD PHASE (R94) [SE board]	
6	Burst phase & level		⊙ BURST PHASE (R73) [SE board] ⊙ BURST LEVEL (R110) [SE board]	



No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⌚) Adjustment level (☆)	Adjustment procedure
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### 3.5-N ENCODER ADJUSTMENT - 2 (Adjustment of Y/C 358 and Y/R-Y/B-Y signal levels) : NTSC

**Note:** The following adjustment should be performed successively after the procedure of 3.4 Encoder Adjustment - 1.

1	Y/C 358 signal level	Oscilloscope (H-rate, 10 : 1) ↑ with 1 k $\Omega$ terminator (see 3.2.2)	SE board → Use the Extension board for it.  ⊙ TP23 [Extension board] with 1 k $\Omega$ termination ⌚ Y2 LEVEL (R36) [SE board] ☆ 0.835 Vp-p (with sync) ⊙ TP27 [Extension board] with 1 k $\Omega$ termination ⌚ CHROMA LEVEL (R85) [SE board] ☆ 0.286 Vp-p (Burst level)  POSITION S1 1:Y/C .....ON 2:RGB .....OFF 3:AUTO .....ON 4:COMPO .....OFF	<b>Note:</b> Measuring conditions: • In the same condition as for the section 3.4. 1) Set the S1 switch of the VP board of the camera adapter KA-20 to the <u>following position</u> . 2) Adjust VRs to obtain specified levels.
2	Y/R-Y/B-Y signal levels	Oscilloscope (H-rate, 10 : 1) ↑ with 1 k $\Omega$ terminator (see 3.2.2)	⊙ TP23 [Extension board] with 1 k $\Omega$ termination ⌚ Y1 LEVEL (R27) [SE board] ☆ 0.835 Vp-p (with sync) ⊙ TP25 [Extension board] with 1 k $\Omega$ termination ⌚ R-Y OUT GAIN (R2) [SE board] ☆ 0.7 Vp-p ⊙ TP26 [Extension board] with 1 k $\Omega$ termination ⌚ B-Y OUT GAIN (R7) [SE board] ☆ 0.7 Vp-p  	3) Set the Y/C selector (S1) of the VP board of the camera adapter KA-20 to "OFF" position. 4) Set the CABLE (MODE) SELECT switch on the left side of KA-20 to "VTR" position.



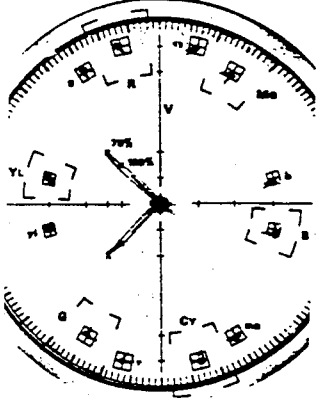
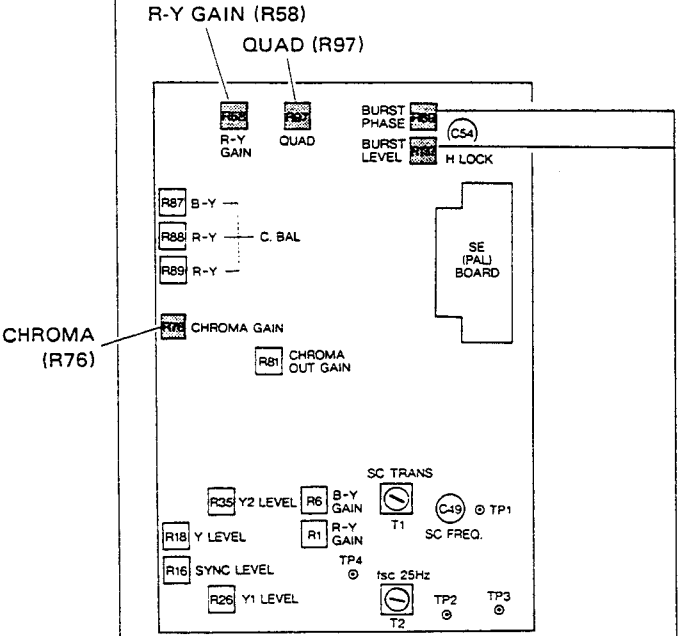
No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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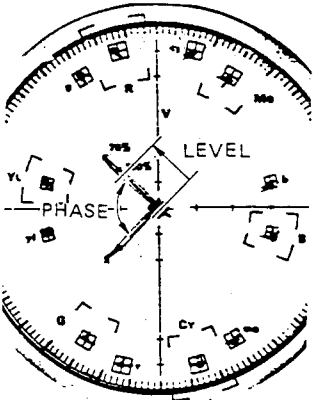
### 3.4-P ENCODER ADJUSTMENT - 1 (Adjustment of composite signal) : PAL

**Note:** If this adjustment is performed without a vectorscope, proceed the adjustment and checkup of the items only from No. 1 (Bar level adjustment) to No. 3 (Carrier balance adjustment).

<p>1 Bar level</p> <p>SE board</p>	<p>Oscilloscope (H-rate, 10 : 1) ↑ with 75 <math>\Omega</math> terminator A (see 3.2.2)</p>	<p>SE board → Use the Extension board for it.</p> <p>⊙ TP24 [Extension board] with 75<math>\Omega</math>/75<math>\Omega</math> terminator A ⊕ Y LEVEL (R18) [SE board] ☆ 0.7 Vp-p</p> <p>⊕ SYNC LEVEL (R16) [SE board] ☆ 0.3 Vp-p</p>	<p><b>Note:</b> Measuring conditions:</p> <ul style="list-style-type: none"> <li>Filter disk → 1 (closed)</li> <li>CAMERA/COLOR BARS switch → BARS</li> <li>PIX SELECT switch [CP board] → 3 (ENC)</li> <li>Adjust for the specified values.</li> </ul>
<p>2 Test output level</p> <p>PR 2 board</p>	<p>Waveform monitor or Oscilloscope (H-rate, 10 : 1)</p>	<p>⊙ TEST OUTPUT terminal (with 75 <math>\Omega</math> termination) ⊕ TEST OUT GAIN (R161) [PR2 board] ☆ 1.0 Vp-p (level between Sync tip and Y peak)</p>	<ul style="list-style-type: none"> <li>Set for the specified value.</li> </ul>
<p>3 Carrier balance</p> <p>SE board</p>	<p>Waveform monitor or Oscilloscope (H-rate, 10 : 1)</p>	<p>⊙ TEST OUTPUT terminal (with 75<math>\Omega</math> termination) ⊕ B-Y C BAL (R87) [SE board] ⊕ R-Y C BAL (R88) [SE board] ⊕ R-Y C BAL (R89) [SE board] ☆ Minimum carrier leak</p> <div> <p>* Procedure with a vectorscope used</p> <ol style="list-style-type: none"> <li>Vectorscope's GAIN → Maximum</li> <li>Turn the C BAL VRs alternately to position the spots at the center of the screen.</li> </ol> </div>	<p>1) Turn the VRs R87 and R88 alternatively so that the carrier leakage of Black is minimized.</p> <p>2) Adjust the R89 to minimize carrier leakage of each lines. The R89 minimizes the carrier leakage of V-axis.</p>



No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
4	Chroma level, etc.  • Adjust chroma level first, then, adjust R-Y level.	Vectorscope	⊙ TEST OUTPUT terminal (with 75 Ω termination) ⊕ CHROMA GAIN (R76) [SE board] ⊕ R-Y GAIN (R58) [SE board]	1) GAIN of vectorscope → CAL, or 75% (pre-set position) 2) Adjust VRs to set every spot (R, G, B, M <sub>G</sub> , C <sub>Y</sub> , Y <sub>L</sub> ) at the specified point on the vector-scope's screen as shown below.
5	Quadrature	R-Y GAIN (R58) QUAD (R97)	⊕ QUAD (R97) [SE board]	
6	Burst phase & level		⊕ BURST PHASE (R69) [SE board] ⊕ BURST LEVEL (R137) [SE board]	• Adjust R69 and R137 respectively for correct burst phase and burst level.

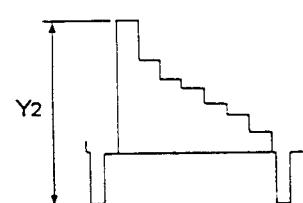

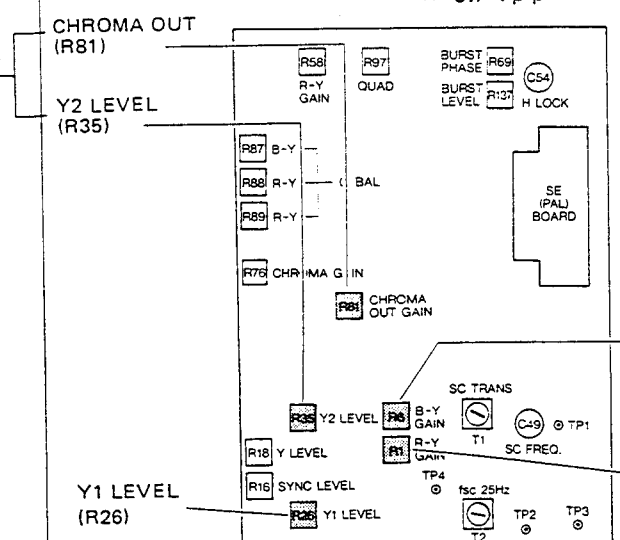
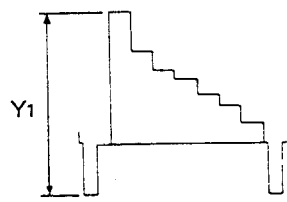
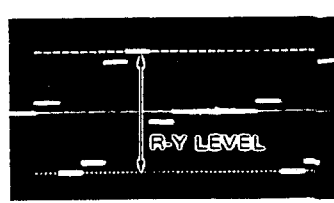
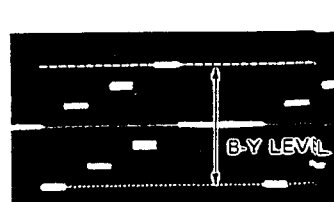




No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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### 3.5-P ENCODER ADJUSTMENT - 2 (Adjustment of Y/C 443 and Y/R-Y/B-Y signal levels) : PAL

**Note:** The following adjustment should be performed successively after the procedure of 3.4-P Encoder Adjustment -1.

1	Y/C 443 signal level	Oscilloscope (H-rate, 10 : 1)  ↑ with 1 kΩ terminator (see 3.2.2)	SE board → Use the Extension board for it.  ⊙ TP23 [Extension board] with 1 kΩ termination ⊕ Y2 LEVEL (R35) [SE board] ☆ 1.0 Vp-p (with sync) ----- ⊙ TP27 [Extension board] with 1 kΩ termination ⊕ CHROMA OUT (R81) [SE board] ☆ 0.3 Vp-p (Burst level)  POSITION  S1 1:Y/C .....ON 2:RGB .....OFF 3:AUTO .....ON 4:COMPO .....OFF	<b>Note:</b> Measuring conditions: • In the same condition as for the section 3.4-P.  1) Set the S1 switch of the VP board of the camera adapter KA-20 to the <u>following position</u> .  2) Adjust VRs to obtain specified levels.   
2	Y/R-Y/B-Y signal levels	Oscilloscope (H-rate, 10 : 1)  ↑ with 1 kΩ terminator (see 3.2.2)	⊙ TP23 [Extension board] with 1 kΩ termination ⊕ Y1 LEVEL (R26) [SE board] ☆ 1.0 Vp-p (with sync) ⊙ TP25 [Extension board] with 1 kΩ termination ⊕ R-Y OUT GAIN (R1) [SE board] ☆ 0.7 Vp-p ⊙ TP26 [Extension board] with 1 kΩ termination ⊕ B-Y OUT GAIN (R6) [SE board] ☆ 0.7 Vp-p  	3) Set the Y/C selector (S1) of the VP board of the camera adapter KA-20 to "OFF" position.  4) Set the CABLE (MODE) SELECT switch on the left side of KA-20 to "VTR" position.    



No.	Item	Measuring instruments & Input signals	Measuring point ( ◎ ) Adjustment parts ( ① ) Adjustment level ( ☆ )	Adjustment procedure
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### 3.6-P ADJUTMENT OF CAMERA ADAPTER OUTPUT LEVEL

- Refer to "3.6 ADJUSTMENT OF CAMERA ADAPTER (KA-20) OUTPUT LEVEL" of page 3-7-N.

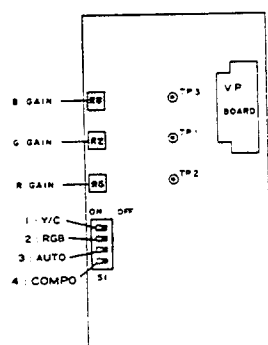
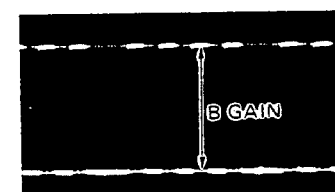


No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⊙) Adjustment level (☆)	Adjustment procedure
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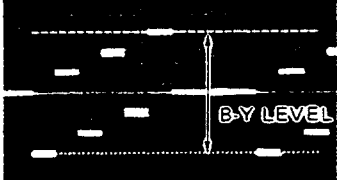
### 3.6-N ADJUSTMENT OF CAMERA ADAPTER (KA-20) OUTPUT LEVEL

**Note:** The following should be adjusted after the adjustments of sections 3.4 and 3.5 "Encoder Adjustment - 1 & 2".

1	Output level (26-pin) Connector)	<p>Oscilloscope (H-rate, 10 : 1) ↑ with 75 Ω terminator B ↓ GND (TP1 of Extension board)</p>	<p>VP board → Use the Extension board for it.</p> <p>◎ TP18 [Extension board] or TP1 [VP board] with 75 Ω terminator B ⊙ G GAIN (R2) [VP board] ☆ 0.525 Vp-p</p> <hr/> <p>◎ TP17 [Extension board] or TP2 [VP board] with 75 Ω terminator B ⊙ R GAIN (R5) [VP board] ☆ 0.525 Vp-p</p> <hr/> <p>◎ TP19 [Extension board] or TP3 [VP board] with 75 Ω terminator B ⊙ B GAIN (R8) [VP board] ☆ 0.525 Vp-p</p>	<p><b>Note:</b> Measuring condition:</p> <ul style="list-style-type: none"> <li>In the same condition as for the previous sections 3.4 and 3.5.</li> </ul> <p>1) Set the RGB selector (S1) of the VP board of the camera adapter KA-20 to "ON" position and other selector (S1) to "OFF". 2) Adjust VRs to obtain the specified level.</p>
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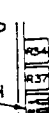
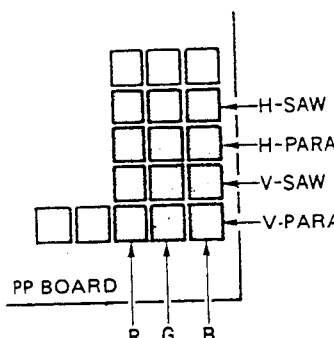


No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (Ⓢ) Adjustment level (☆)	Adjustment procedure
		Oscilloscope (H-rate, 10 : 1) ↑ with 75 Ω ← terminator B ↓ GND (TP1 of Extension board)	⊙ TP17 [Extension board] or TP2 [VP board] [ with 75 Ω terminator B Ⓢ R-Y GAIN (R26) [VP board] ☆ 0.486 Vp-p (NTSC) 0.525 Vp-p (PAL) ----- ⊙ TP19 [Extension board] or TP3 [VP board] [ with 75 Ω terminator B Ⓢ B-Y GAIN (R24) [VP board] ☆ 0.486 Vp-p (NTSC) 0.525 Vp-p (PAL)	3) Set the COMPO selector (S1) of the VP board of the camera adapter KA-20 to "ON" position and other selector (S1) to "OFF". 4) Adjust VRs to obtain the specified level. 5) Set the selectors (S1) on the VP board as follows (initial set positions): ● Y/C selector → OFF ● RGB selector → OFF ● AUTO selector → ON ● COMPO selector → OFF   



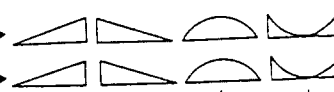
No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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### 3.7 ADJUSTMENT OF STATIC SHADING

1	Static shading	Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT (with 75 $\Omega$ termination) ⊕ STATIC SHADING [PP board]	<b>Note:</b> Measuring condition: <ul style="list-style-type: none"> <li>• Filter disk set to "1" (CLOSE) position.</li> <li>• CAMERA/COLOR BARS switch to "CAM".</li> <li>• WHITE BAL switch set to "PRESET".</li> <li>• HI-SENS switch set to "+18 dB".</li> <li>• Change the set position of S2 on the CP board for the <b>BLACK ADJUST mode</b>.</li> </ul> <div style="text-align: right;">              S2 SWITCH            1 : ON (CHECK switch)            2 : ON (CONTOUR switch) CP BOARD         </div>																
			<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  </div> <table border="1"> <thead> <tr> <th>PIX SEL SW</th> <th>0</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>V-SAW</td> <td>R31</td> <td>R29</td> <td>R27</td> </tr> <tr> <td>V-PARA</td> <td>R45</td> <td>R43</td> <td>R41</td> </tr> <tr> <td>H-SAW</td> <td>R10</td> <td>R8</td> <td>R6</td> </tr> <tr> <td>H-PARA</td> <td>R20</td> <td>R18</td> <td>R16</td> </tr> </tbody> </table> </div> <p>☆ Minimum shading</p>		PIX SEL SW	0	1	2	V-SAW	R31	R29	R27	V-PARA	R45	R43	R41	H-SAW	R10	R8	R6
PIX SEL SW	0	1	2																	
V-SAW	R31	R29	R27																	
V-PARA	R45	R43	R41																	
H-SAW	R10	R8	R6																	
H-PARA	R20	R18	R16																	

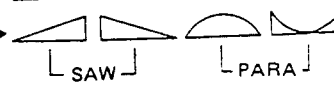
1) Correct static shading for each channel by switching the PIX SELECT switch on the CP board to a corresponding position.

H →



SAW      PARA

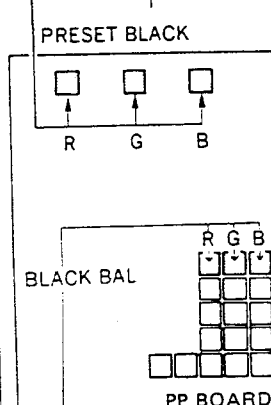
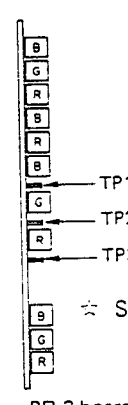
V →



SAW      PARA

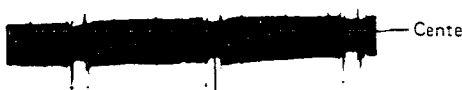
2) Set the S2 switch on the CP board to "OFF" position.

### 3.8 ADJUSTMENTS OF PRESET BLACK AND BLACK BALANCE

1	Preset black	Oscilloscope (H-rate, 10 : 1)	◎ TP [PR1 board]    ⊕ VR [PP]	<b>Note:</b> Measuring condition: <ul style="list-style-type: none"> <li>• The same for the above section 3.7</li> </ul>
			<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  </div> <div>  </div> </div>	

B	TP1	B PRESET BLACK (R80)
G	TP2	G PRESET BLACK (R82)
R	TP3	R PRESET BLACK (R84)

1) Adjust VRs for each channel so that the center of video noise is positioned at the tip of C. HD pulse.



Center

2	Black balance	Oscilloscope (H-rate, 10 : 1) DC input	◎ TP [PR1 board]    ⊕ VR [PP]						
			<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  </div> <table border="1"> <tr> <td>B</td> <td>TP1</td> <td>B BLACK BAL (R67)</td> </tr> <tr> <td>G</td> <td>TP2</td> <td>G BLACK BAL (R68)</td> </tr> <tr> <td>R</td> <td>TP3</td> <td>R BLACK BAL (R69)</td> </tr> </table> </div>	B	TP1	B BLACK BAL (R67)	G	TP2	G BLACK BAL (R68)
B	TP1	B BLACK BAL (R67)							
G	TP2	G BLACK BAL (R68)							
R	TP3	R BLACK BAL (R69)							

2) Switching the HI-SENS switch in the range between 0 dB and +18 dB repeatedly, adjust the waveform so that the center of noise does not fluctuate straight.

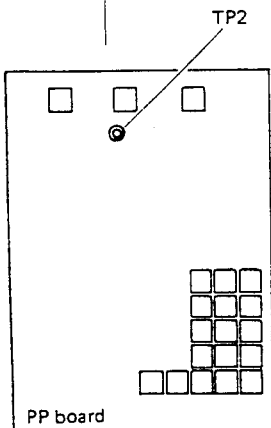


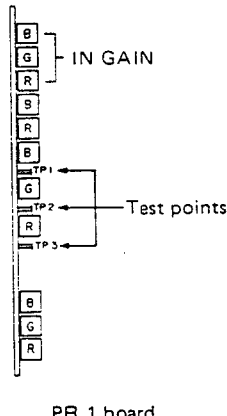


☆ Non-straight fluctuation



No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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### 3.9 ADJUSTMENT OF IN-GAIN (Setting of input signals)

1	In-gain	<p>Grey scale chart</p> <p>↓</p> <p>Just scan</p> <p>Oscilloscope (H-rate, 10 : 1)</p>  <p>TP2</p> <p>PP board</p>	<p>◎ TP2 (G-CH) [PP board] ⊕ Lens iris ☆ 0.4 Vp-p (100%)</p>	<p><b>Note:</b> Measuring condition:</p> <ul style="list-style-type: none"> <li>• WHITE BAL switch set to "PRESET"</li> <li>• Sufficient lighting so that the iris is set at F5.6 or small with 100% incoming signals</li> <li>• HI-SENS switch set to "0 dB"</li> <li>• Check up that the correlative position of the camera and the grey scale chart is correct.</li> <li>• Confirm uniformity of the lighting against the grey scale chart.</li> </ul> <p>Connect an oscilloscope to TP1 (B-CH) of the PP board, and observing it on the V-rate adjust the lighting so that video signal waveform becomes flat.</p>  <ul style="list-style-type: none"> <li>• Set the lens iris to the "MANUAL" mode.</li> </ul> <p>1) Adjust the lens iris to obtain the specified level (100%).</p>  <p>0.4 Vp-p</p> <p><b>Note:</b> Until B and R gain adjustments are completed, do not touch the lens iris.</p>							
		 <p>PR 1 board</p>	<p>◎ TP [PR 1 board]    ⊕ VR [PR1]</p> <table border="1"> <tr> <td>B</td> <td>TP1</td> <td>B IN-GAIN (R1)</td> </tr> <tr> <td>G</td> <td>TP2</td> <td>G IN-GAIN (R2)</td> </tr> <tr> <td>R</td> <td>TP3</td> <td>R IN-GAIN (R3)</td> </tr> </table> <p>☆ 1.2 Vp-p</p>	B	TP1	B IN-GAIN (R1)	G	TP2	G IN-GAIN (R2)	R	TP3
B	TP1	B IN-GAIN (R1)									
G	TP2	G IN-GAIN (R2)									
R	TP3	R IN-GAIN (R3)									



No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (⌚) Adjustment level (☆)	Adjustment procedure
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### 3.10 ADJUSTMENTS OF VIDEO OUTPUT LEVEL AND BLACK BALANCE

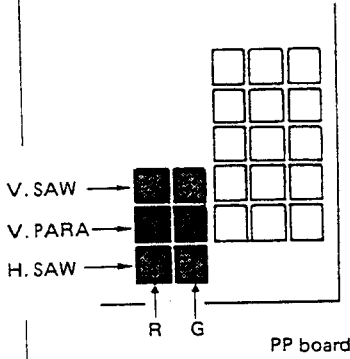




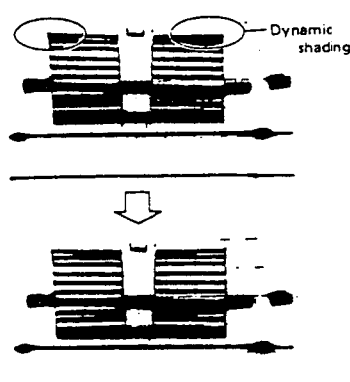
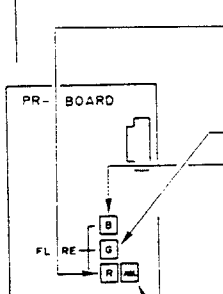
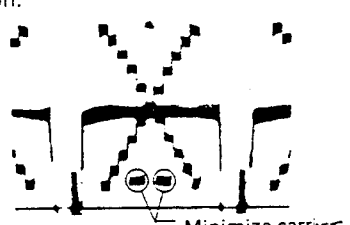
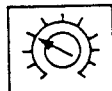
1	Preparation	<p>PR2 board</p>	<p>PR-2 board → Use the Extension board for it.</p> <p>RP1 board</p> <p>PR 2 board</p>	<p><b>Measuring condition:</b></p> <ul style="list-style-type: none"> <li>Adjustments of this section should be performed after completion of the adjustments of the sections 3.4 and 3.5 and in succession to the previous section 3.9.</li> <li>Lens iris set to "MANUAL" position</li> <li>HI-SENS switch set to "0 dB" position</li> <li>WHITE BAL switch set to "PRESET"</li> <li>CONTOUR switch (S2-2) of the CP board is set to "OFF" position.</li> <li>KNEE VRs (PR 1 board) is released (turned fully counterclockwise).</li> <li>WHITE CLIP VRs (PR 2 board) is released (turned fully clockwise).</li> <li>Check up that the correlative position of the camera and the chart is correct.</li> <li>Confirm the uniformity of the lighting.</li> </ul>
2	R/B black balance	<p>Lens: Capped</p> <p>Oscilloscope (H-rate, 10 : 1)</p> <p>PR 1 board</p>	<p>CP board</p> <p>⊙ TEST OUTPUT (with 75 Ω termination) ⌚ B BLACK (R16)[PR 1 board] ⌚ R BLACK (R18)[PR 1 board] ☆ Minimum carrier</p>	<ol style="list-style-type: none"> <li>Set the filter disk to "1" (closed) position.</li> <li>Change the set position of S2 on the CP board for the <u>BLACK ADJUST mode</u>. S2 → 1 : ON (CHECK switch) 2 : ON (CONTOUR switch)</li> <li>Alternately turn VRs to minimize the carrier leak.  Minimize carrier.</li> <li>Set the S2 switch to "OFF" position.</li> </ol>
3	Master black	<p>Oscilloscope (H-rate, 10 : 1)</p>	<p>⊙ TP10 [Extension board] ⌚ MASTER BLACK (R34) [CP board]</p>	<ol style="list-style-type: none"> <li>Adjust R34 so that video noise is clipped by the center.</li> </ol>



No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure
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4	G-CH gain & gamma	<p>Grey scale chart ↓ Just scan</p> <p>Oscilloscope (H-rate, 10 : 1)</p> <p>PR 1 board</p> <p>Don't tamper these switches.</p>	<p>Check up the following: TP2 (G-CH) [PR 1 board] → 1.2 Vp-p (100% grey scale)</p> <p>Adjust by the lens iris.</p> <p>◎ TP10 [Extension board] ① G GAIN (R8) [PR 2 board] ☆ 1.4 Vp-p ① G GAMMA (R87) [PR 1 board] ☆ NTSC : 0.73 Vp-p PAL : 0.78 Vp-p</p> <p>6) Adjust VRs to obtain the specified levels, respectively.</p>	
4	R/B CH gain & gamma	<p>Oscilloscope or Waveform monitor</p> <p>PR board</p> <p>Don't tamper these switches.</p>	<p>◎ TEST OUTPUT (with 75 Ω termination)</p> <p>① B GAIN (R7) [PR 2 board] ① R GAIN (R9) [PR 2 board] ① B GAMMA (R86) [PR 1 board] ① R GAMMA (R88) [PR 1 board] ☆ Minimum carrier leak</p> <p>7) Adjust VRs to minimize video signal's white level and carrier at the cross point.</p> <p>Minimize carrier.</p> <p>Minimize carrier.</p> <p>• Check up that video signal levels at the TEST OUTPUT is in the specified range and carrier leaks are minimized.</p> <p>• If there is difference between B and R levels, slightly turn R8 (G-GAIN) or R87 (G-GAMMA) of the PR 1/PR 2 board, and then alternately turn R7 (B-GAIN) and R9 (R-GAIN) (or R86 [B-GAMMA] and R88 [R-GAMMA]) to minimize the carrier leak.</p> <p>☆ NTSC : 100 IRE (0.714 V) PAL : 100% (0.7 V)</p> <p>◎ TEST OUTPUT</p> <p>☆ NTSC : 58 IRE (0.414 V) PAL : 56% (0.39 V)</p>	

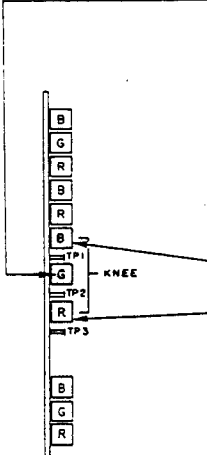
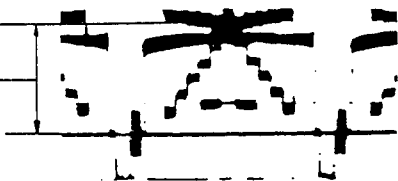
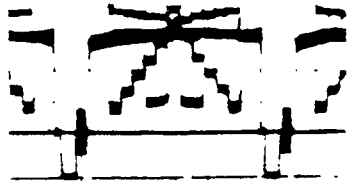
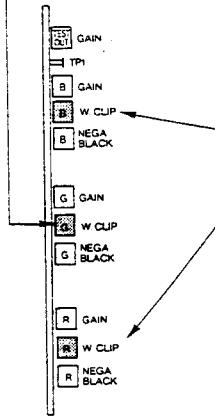
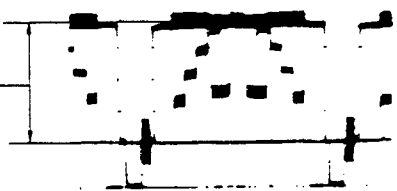
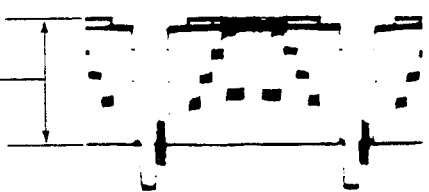


No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
5	V. dynamic shading	Oscilloscope (V-rate), or Waveform monitor (2 V)  	⊙ TEST OUTPUT (with 75 Ω termination)  ⊕ Following VRs on PP board <div style="border: 1px solid black; padding: 5px; margin: 5px;">  G-DY-V. SAW (R33)  R-DY-V. SAW (R35)  G-DY-H. SAW (R103)  R-DY-H. SAW (R105)     G-DY-V. PARA (R47)  R-DY-V. PARA (R49) </div> ☆ Minimum dynamic shading	<b>Note:</b> Check up the following: TEST OUTPUT → 0.7 Vp-p <ul style="list-style-type: none"> <li>If dynamic shading (carrier leak) is observed in the portion of video signal's white level, perform the following adjustment. (At this time, confirm the setting of lens iris.  NTSC : F5.6 or smaller  PAL : from F4 to F8.</li> </ul> 8) Minimize dynamic shading. <div style="border: 1px solid black; padding: 5px; margin: 5px; text-align: center;"> Adjust  first, then adjust  . </div> 
6	Flare correction	Oscilloscope (H-rate), or Waveform monitor  Grey scale chart ↓ Just scan  	PR 1 board → Use the Extension board for it.  ⊙ TEST OUTPUT (with 75 Ω termination) ⊕ R FLARE (R48) [PR 1 board] ☆ Fully clockwise position  ⊕ G FLARE (R47) [PR-1 board] ⊕ B FLARE (R46) [PR-1 board] ☆ Minimum carriers in the black portion	<b>Check up the following:</b> Grey scale's white level → 100 % TP2 (G-ch) [TP-1 board] → 1.2 Vp-p, or TEST OUTPUT (with 75 Ω termination) → NTSC : 0.714 Vp-p → PAL : 0.7 Vp-p (Adjust by the lens iris.) Black balance is adjusted. (Filter disk → "1" position (closed)) 9) Set the filter disk to "2" position (3200 K). 10) Turn R48 fully clockwise.  11) Adjust VRs to minimize carriers in the black portion. 
7	ABL	Grey scale chart ↓ Just scan	⊙ TEST OUTPUT (with 75 Ω termination) ⊕ ABL (R60) [PR 1 board] ☆ 4 stops from fully counterclockwise	<ul style="list-style-type: none"> <li>Check up the same condition existing as in the above step 6.</li> </ul> 1) Set the ABL VR to the following position.  (4 stops from fully counterclockwise)



No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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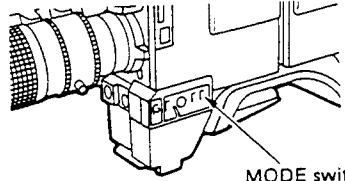
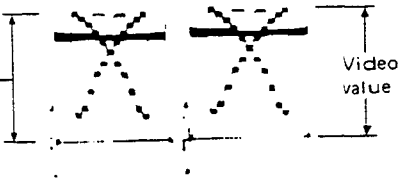
### 3.11 ADJUSTMENTS OF KNEE SLOPE AND WHITE CLIP

1	Knee slope	Waveform monitor or Oscilloscope (H-rate, 10 : 1)	<p>⊙ TEST OUTPUT (with 75 <math>\Omega</math> termination)</p> <p>⊕ G KNEE (R58) [PR 1 board] ☆ Just before carrier leak</p> <p>NTSC : 0.714 Vp-p (100 IRE) PAL : 0.7 Vp-p (100%)</p> <p>⊕ B KNEE (R56) [PR 1 board] ⊕ R KNEE (R59) [PR 1 board] ☆ Minimum carrier leak</p>  <p>PR 1 board</p>	<p><b>Measuring condition:</b></p> <ul style="list-style-type: none"> <li>The following items should be adjusted after completion of the section 3.10.</li> </ul> <p><b>Check the following:</b></p> <ul style="list-style-type: none"> <li>Grey scale's white level <math>\rightarrow</math> 100% TEST OUTPUT (75 <math>\Omega</math> terminated) <math>\rightarrow</math> NTSC : 0.714 Vp-p (100 IRE) <math>\rightarrow</math> PAL : 0.7 Vp-p (100%) (Adjust by the lens iris.)</li> </ul> <p>1) Adjust R58 so that G knee appears just before carrier leak of the white level.</p>  <p>2) Set the HI-SENS switch to "9 dB" position. 3) Alternately turn R56 and R59 to minimize carrier leaks respectively.</p> 
2	White clip		<p>⊕ G W.CLIP (R122) [PR 2 board] ☆ Lower carrier leak:</p> <p>NTSC : 0.785 Vp-p (110 IRE) PAL : 0.77 Vp-p (110%)</p> <p>⊕ B W.CLIP (R121) [PR 2 board] ⊕ R W.CLIP (R123) [PR 2 board] ☆ Minimum carrier leak</p> <p>NTSC : 0.785 Vp-p (110 IRE) PAL : 0.77 Vp-p (110%)</p>  <p>PR 2 board</p>	<p>4) Set the HI-SENS switch to "18 dB" position. 5) Adjust lower carrier leak to be of 0.785 Vp-p (110 IRE : NTSC), 0.77 Vp-p (110% : PAL)</p>  <p>6) Turn R121 and R123 alternately to minimize carrier leaks respectively.</p>  <p><b>Check up the following:</b></p> <ul style="list-style-type: none"> <li>Repeat the steps 5) and 6) until clipping level becomes 0.785 Vp-p (110 IRE : NTSC) 0.77 Vp-p (110% : PAL)</li> <li>7) Set the HI-SENS switch to "0 dB" position.</li> </ul>



No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⊙) Adjustment level (☆)	Adjustment procedure
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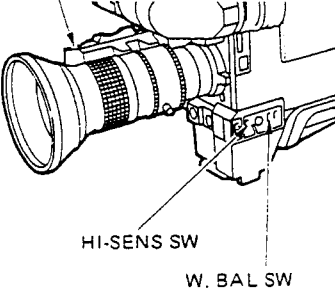
### 3.12 ADJUSTMENT OF NEGATIVE VIDEO SIGNALS

1	Negative video signal	Oscilloscope (H-rate, 10 : 1) or Waveform monitor  Grey scale chart ↓ Just scan	◎ TEST OUTPUT (with 75 Ω) ⊙ G NEG BLK (R67) [PR-2] ⊙ B NEG BLK (R66) [PR-2] ⊙ R NEG BLK (R68) [PR-2] ☆ NTSC : 0.714 Vp-p (100 IRE) PAL : 0.7 Vp-p (100%) Minimum carrier leak	1) Set the MODE switch to "NEGA" position.  2) Adjust VRs so that G/B/R signal level becomes specified value and carrier leak is minimized respectively.  3) Set the MODE switch to "CAM" position.
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### 3.13 ADJUSTMENT OF AUTOMATIC CONTROL CIRCUITS (AUTO IRIS, AUTO WHITE, AUTO BLACK, LEVEL INDICATOR)

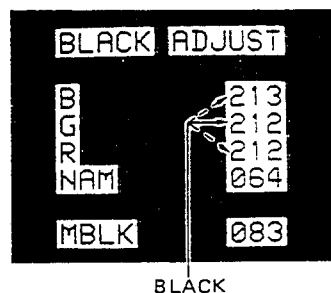
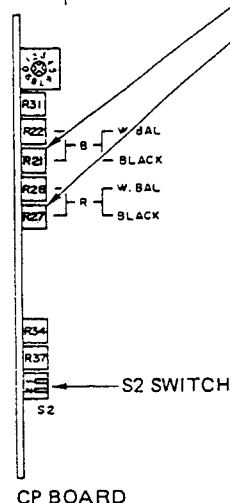
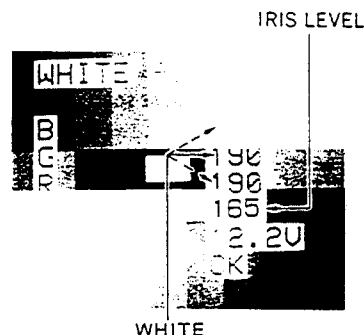
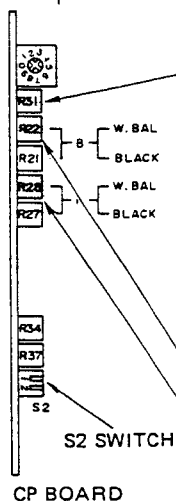
**Note:** For this adjustment, an electronic viewfinder (VF-P10, VF-P400, etc.) is needed.

(Otherwise the extension cable SCV0277-001 can be used in combination with a B/W monitor connected.)

1	Preparation	Grey scale chart ↓ Just scan  Oscilloscope or Waveform monitor	Lens iris mode switch  HI-SENS SW W. BAL SW  
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No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
2	Lens iris	Grey scale chart ↓ Just scan	⊙ Viewfinder's CRT  ⊕ IRIS LEVEL (R31) [CP board] ☆ "165" NAM value	1) Switch the set position of S2 (switch on the CP board) for the WHITE ADJUST mode. • S2 → 1 : ON (CHECK switch) 2 : OFF (CONTOUR switch) 2) Set the NAM value on the CRT to "165".
3	Auto white		⊕ B WHITE (R22) [CP board] ⊕ R WHITE (R28) [CP board] ☆ Displayed values: B = R = G	3) Adjust R22 and R28 so that B and R values displayed on the CRT coincide with that of G.
4	Auto black		⊕ B BLACK (R21) [CP board] ⊕ R BLACK (R27) [CP board] ☆ Displayed values: B = R = G	4) Filter disk set to "1" (closed) position 5) Change the set position of S2 on the CP board for the BLACK ADJUST mode. • S2 → 1 : ON (CHECK switch) 2 : ON (CONTOUR switch) 6) Adjust R21 and R27 so that B and R values displayed on the CRT coincide with that of G.





No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (⌚) Adjustment level (☆)	Adjustment procedure
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5

- ⊙ Viewfinder screen
- ⊙ TEST OUTPUT  
(75  $\Omega$  terminated)
- ⌚ Lens iris
- ☆

	TEST OUTPUT	Level
NTSC	100%	0.714 Vp-p
PAL		0.7 Vp-p

**Note:**

Zebra indicating part is between 85 to 95% of nominal video amplitude. Ensure the iris opening to get the specified value at video output with oscilloscope if EIA log. grey scale is used.

- ⊙ Viewfinder screen
- ⌚ ZEBRA SET (R5)  
[ZEBRA SUB board  
on the SE board]

- 1) Set the lens iris switch to MANU and adjust the iris manually so that the TEST OUTPUT connector is 100%.
- 2) In the viewfinder, check that the stripes are displayed as shown below.  
If the correct display is not observed, press the LEVEL INDICATOR switch on the front of the camera in case of the switch off.

Zebra indication at  
2nd white chip.

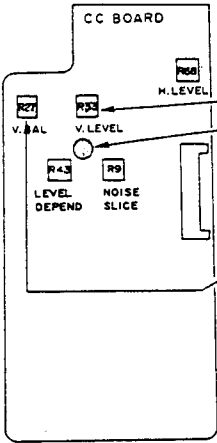
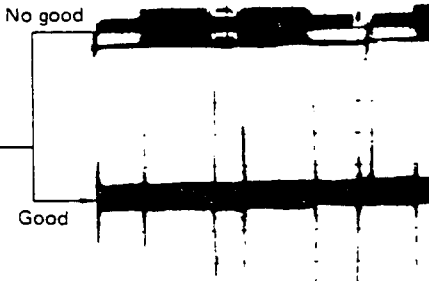
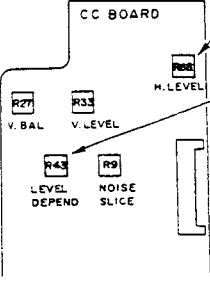
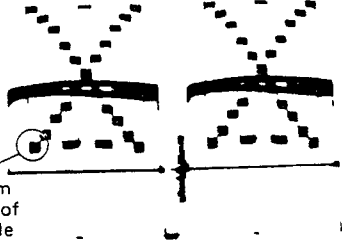
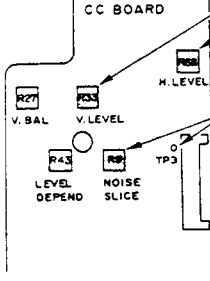

Standard display with JVC grey scale

- 3) Adjust ZEBRA SET (R5) so that the stripe pattern is displayed in the second step from the white position.

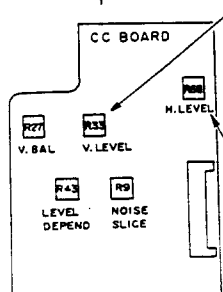
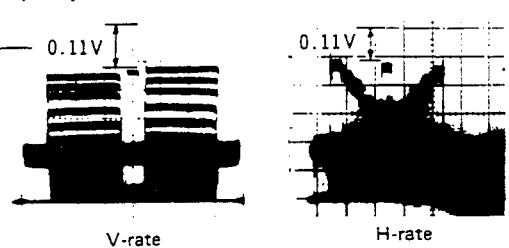


No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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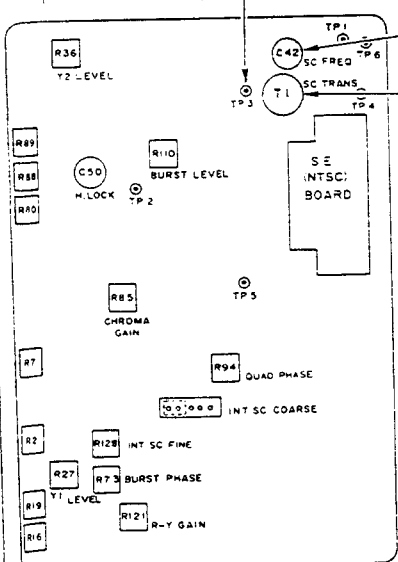
### 3.14 ADJUSTMENT OF CONTOUR CORRECTOR

1	V. zero balance	<p>Oscilloscope (V-rate, 10 : 1)</p> <p>Grey scale chart ↓ Just scan</p> 	<p>⊕ V LEVEL (R33) [CC1 board] ☆ Fully clockwise position</p> <hr/> <p>⊙ C20 (⊖) [CC1 board] ⊕ V. BAL (R27) [CC1 board] ☆ Minimum video component</p>	<p><b>Measuring condition:</b></p> <ul style="list-style-type: none"> <li>• CONTOUR switch (S2-2) on the CP board set to ON</li> <li>• Lens iris set to "MANUAL"</li> <li>• HI-SENS switch set to "0 dB" position</li> <li>• Grey scale's white level: 100 %</li> <li>• TEST OUTPUT (75 Ω terminated) → NTSC : 0.714 Vp-p (100IRE) → PAL : 0.7 Vp-p (100 %)</li> </ul> <p>(Adjustment can be done by the lens iris.)</p> <ul style="list-style-type: none"> <li>• White balance and black balance have been completely adjusted.</li> </ul> <p>1) Turn R33 fully clockwise.</p> <p>2) Adjust R27 to minimize video component.</p> 
2	Level dependent		<p>⊕ H. LEVEL (R68) [CC1 board] ☆ Fully clockwise position</p> <hr/> <p>⊙ TEST OUTPUT (with 75 Ω termination) ⊕ LEVEL DEPEND (R43) [CC1]</p>	<p>3) Turn R68 fully clockwise.</p> <p>4) Adjust R43 so that contour disappears at the 1st step from the bottom of the grey scale.</p> 
3	Noise slice		<p>⊕ V. LEVEL (R33) [CC1 board] ⊕ H. LEVEL (R68) [CC1 board] ☆ Mechanical centers</p> <hr/> <p>⊙ TP3 ⊕ NOISE SLICE (R9) [CC1 board] ☆ Noise level half as much as the maximum value</p>	<p>5) Set VRs to their mechanical centers respectively.</p> <p>6) Adjust R9 so that noise level becomes half as much as the maximum value.</p> 



No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
4	Contour level	Grey scale chart ↓ Just scan  Oscilloscope (V-rate, 10 : 1)   (H-rate, 10 : 1)	⊙ TEST OUTPUT (with 75 Ω termination) ⊕ Lens iris ☆ 0.57 Vp-p (80 IRE)  ⊕ V. LEVEL (R33) [CC1 board] ☆ 0.11 Vp-p (15 IRE)  ⊕ H. LEVEL (R68) [CC1 board] ☆ 0.11 Vp-p (15 IRE)	1) Adjust the grey scale's white level to the specified value.  2) Adjust contour level to the specified value.   V-rate                      H-rate  3) Or use in-mega cycle test card and set H-LEVEL so that the 5 MHz point shows 80% modulation of 0.5 MHz.  <div style="border: 1px solid black; padding: 5px;">             It is necessary to set the lens iris so that the video level at 0.5 MHz becomes 0.57 Vp-p (NTSC) or 0.56 Vp-p (PAL).           </div>

### 3.15-N ADJUSTMENT OF SSG (Adjustment of internal sync. signal) : NTSC

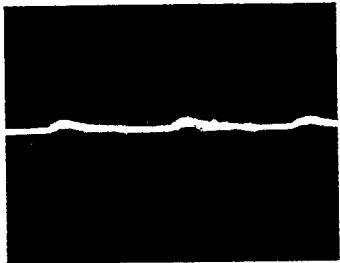
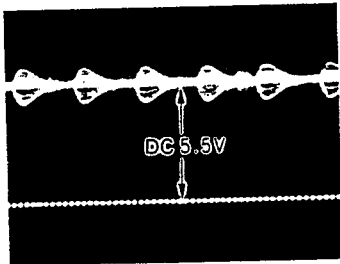
1	SC frequency	Frequency counter Oscilloscope  TP3  	SE board → Use the Extension board for it.  TP3 [SE board] SC FREQ (C42) [SE board] 3.579545 MHz ± 10 Hz SC TRANS (T1) [SE board] ☆ Maximum amplitude	<ul style="list-style-type: none"> <li>• Warm up the camera with the lens iris closed for more than 15 minutes.</li> <li>• Frequency counter with:               <ol style="list-style-type: none"> <li>(1) Display of 8 figures or more</li> <li>(2) Stability of over 0.1 ppm (or <math>1 \times 10^{-7}</math>) at 0°C ~ +40°C.</li> </ol> </li> <li>• Do not touch the following parts:               <ul style="list-style-type: none"> <li>INT SC PHASE - COARSE (S1)</li> <li>FINE (R128)</li> </ul> </li> </ul> 1) Adjust C42 to obtain the specified frequency. 2) Set T1 for the maximum output level.
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No.	Item	Measuring instruments	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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### 3.16-N ADJUSTMENT OF SSG (Adjustment of external gen-locking) : NTSC

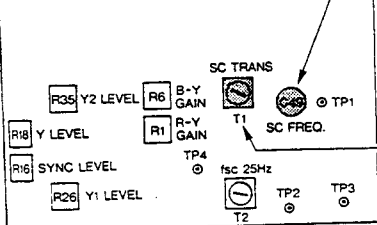
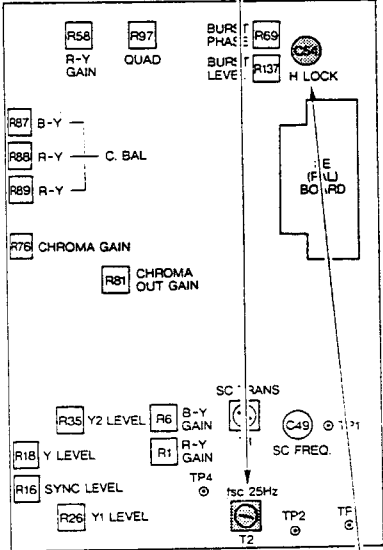
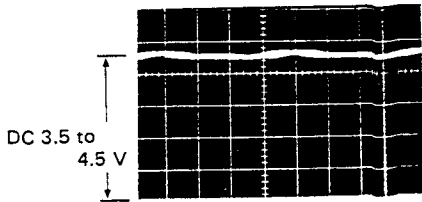
- Notes:
- This adjustment should be performed after the adjustment of the previous section 3.15 was completed.
  - Supply V.B.S. or B.B. signal to the GENLOCK INPUT terminal of the camera adapter on the rear.

1	SC lock	Oscilloscope (V-rate)	⊙ TP1 [SE board] ⊕ SC LOCK (R29)[GL board] ☆ Minimum jittering	1) Adjust R29 to minimize jittering.  
2	H. Lock	Oscilloscope (H-rate, DC range)	⊙ TP2 [SE board] ⊕ H. LOCK (C50)[SE board] ☆ Minimum jittering	2) Adjust C50 to obtain minimized jittering at TP2.  



No.	Item	Measuring instruments & Input signals	Measuring point (⊙) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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### 3.15-P ADJUSTMENT OF SPG (Adjustment of internal sync. signal) : PAL

1	SC frequency	Frequency counter Oscilloscope	<p>SE board → Use the Extension board for it.</p> <p>⊙ IC13 pin 8 ⊕ SC FREQ (C49) [SE board] ☆ 4.433619 MHz ± 10 Hz</p> <p>⊙ TP17 [Extension board] ⊕ SC TRANS (T1) [SE board] ☆ Maximum amplitude</p> 	<ul style="list-style-type: none"> <li>• Warm up the camera with the lens iris closed for more than 15 minutes.</li> <li>• Frequency counter with:             <ol style="list-style-type: none"> <li>(1) Display of 8 figures or more</li> <li>(2) Stability of over 0.1 ppm (or <math>1 \times 10^{-7}</math>) at 0°C ~ +40°C.</li> </ol> </li> </ul> <p>1) Adjust C49 to obtain the specified frequency. 2) Set T1 for the maximum output level.</p>
2	Internal fsc-25 Hz lock	Oscilloscope	<p>⊙ TP4 [SE board] ⊕ fsc 25 Hz (T2) [SE board] ☆ Maximum amplitude</p> 	<p>1) Set T2 for the maximum output level.</p>
3	282 fH lock		<p>⊙ TP2 [SE board] ⊕ H. LOCK (C54) [SE board] ☆ 3.5 to 4.5 V DC &amp; Minimum jittering</p>	<p>2) Adjust C54 to obtain 3.5 to 4.5 V DC with minimized jittering at TP2.</p>  <p>DC 3.5 to 4.5 V</p>

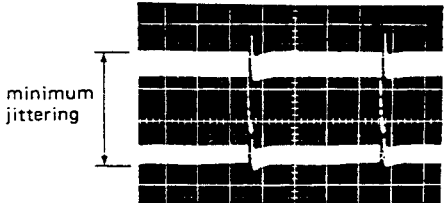
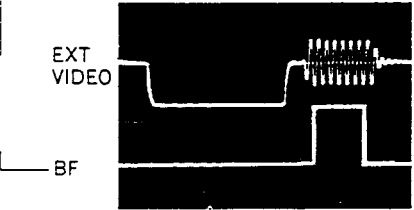
Revised on Aug. 1989.



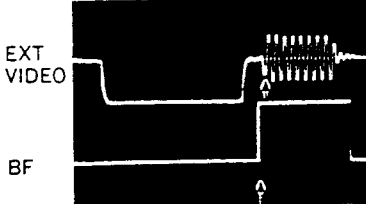
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⌚) Adjustment level (☆)	Adjustment procedure
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### 3.16-P ADJUSTMENT OF SPG (Adjustment of external gen-locking) : PAL

- Note:**
- This adjustment should be performed after the adjustment of the previous section 3.15-P was completed.
  - Supply V.B.S. or B.B. signal to the GENLOCK INPUT terminal of the camera adapter on the rear.

1	SC lock	Oscilloscope (V-rate)	GL board → Use the Extension board for it ◎ TP24 [Extension board] ⌚ SC LOCK (R29) [GL board] ☆ Minimum jittering	1) Adjust R29 to minimize jittering. 
2	Burst Timing	Oscilloscope: (H-rate)	GL board Use the extension board for it. ◎ TP-29 [Extension board] (EXT VIDEO IN) ◎ IC7-8pin side [GL] (BFP) ⌚ Burst timing [GL] R24 ☆ Set the center of BF timing to the center of Burst signal.	1) Connect to oscilloscope A-ch. 2) Connect to oscilloscope B-ch. 



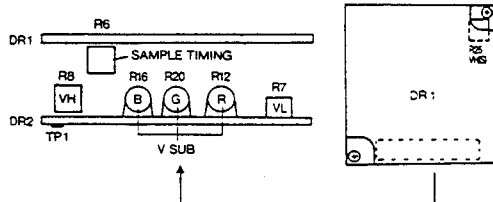
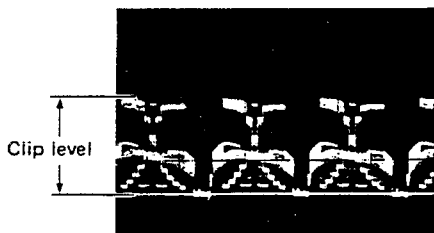
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⌚) Adjustment level (☆)	Adjustment procedure
3	Burst Timing	Oscilloscope: (H-rate)	GL board Use the extension board for it. ◎ TP-29 [Extension board] (EXT VIDEO IN) ◎ R36 (IC7-8pin side) [GL] (BFP) ⌚ Burst timing [GL] R24 ☆ Set the BF timing to the Burst start position.	1) Connect to oscilloscope A-ch. 2) Connect to oscilloscope B-ch. 



No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure
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### 3.17 CCD DRIVER ADJUSTMENT

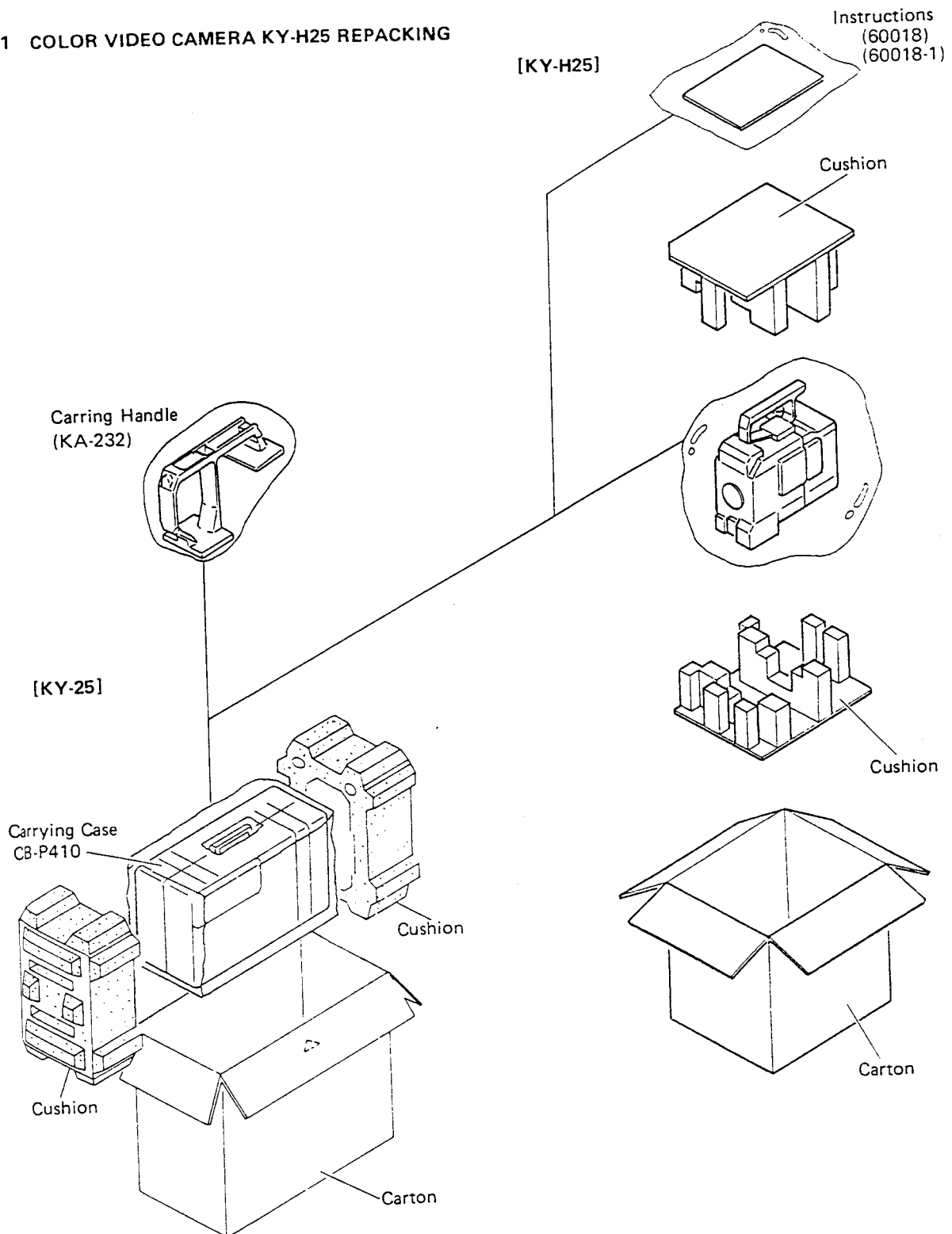
**NOTE:** This adjustment is unnecessary at ordinary servicing. (Include optical Block replacement)  
This is reference.

1	SAMPLE TIMING	Oscilloscope (H-rate, 10 : 1)	◎ TEST output terminal (with 75 Ω termination) ① SAMPLE TIMING (R6) [DR-1 board] ☆ Mechanical center position	<ul style="list-style-type: none"><li>Filter disk set to "1" (CLOSE) position.</li></ul> 1) Adjust R6 to mechanical center position. <div></div>
2	VH bias	Digital Voltmeter	◎ TP1 [DR-2 board] ① VH (R8) [DR-2 board] ☆ +15 V ± 0.3 V	<ul style="list-style-type: none"><li>Set the SHUTTER button to "NORMAL" (1/60) mode.</li></ul> 1) Adjust R8 to obtain the sepcified voltage.
3	VH(S) bias	Digital Voltmeter	◎ TP1 [DR-2 board] ① VH(S) (R25) [DR-2 board] ☆ +14.9 V ± 0.3 V	<ul style="list-style-type: none"><li>Set the SHUTTER button to "250", "500", or "1000" modes.</li></ul> 1) Adjust R25 to obtain the specified voltage.
4	V sub bias (blueing)	Grey Scale chart ↓ Jast Scan Oscilloscope	◎ TP [PP board] ① VR [DR board] ☆ Clip level	<ul style="list-style-type: none"><li>Filter disk set to "2" (3200 K) position. Shoot the Grey scale chart.</li><li>Sufficient lighting so that the iris is set at F5.6 or small with 100% incoming signals.</li><li>Set the lens iris to "MANUAL" mode.</li></ul> 1) Set the lens iris to "open". 2) Set each VRs so that video level is clipped at specified value. <div></div>
5	VL		◎ VL (R7) [DR-2 board] ☆ Mechanical center	1) Set the R7 to mechanical center position.



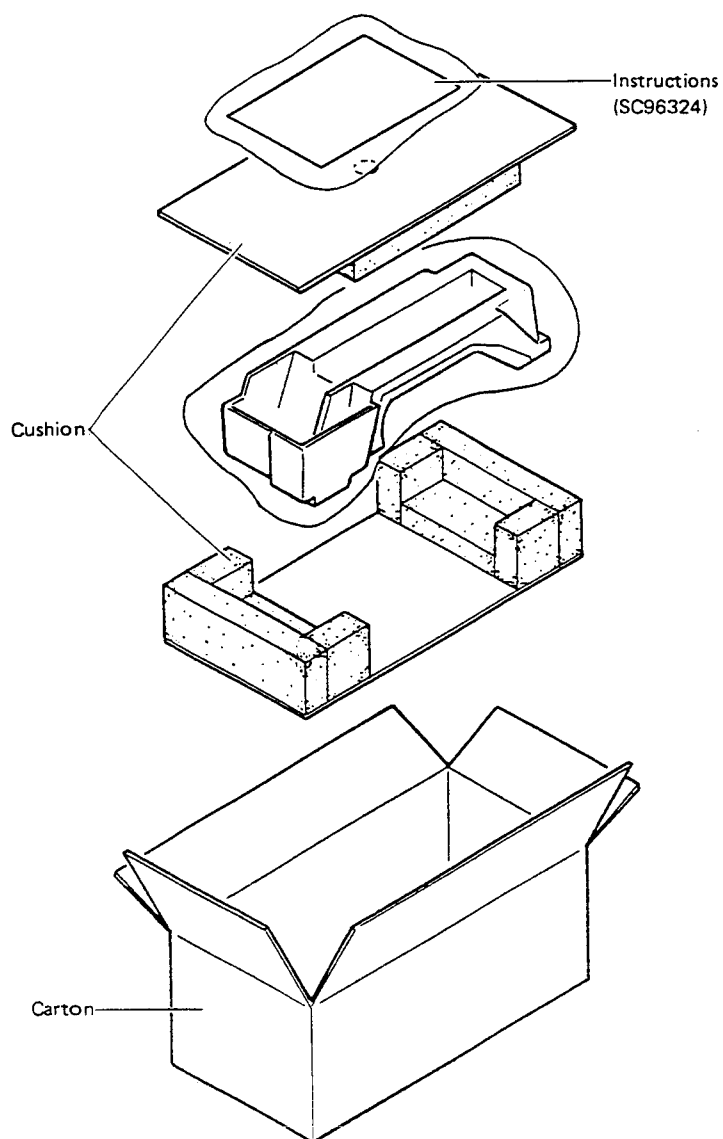
## SECTION 4 REPACKING

### 4.1 COLOR VIDEO CAMERA KY-H25 REPACKING

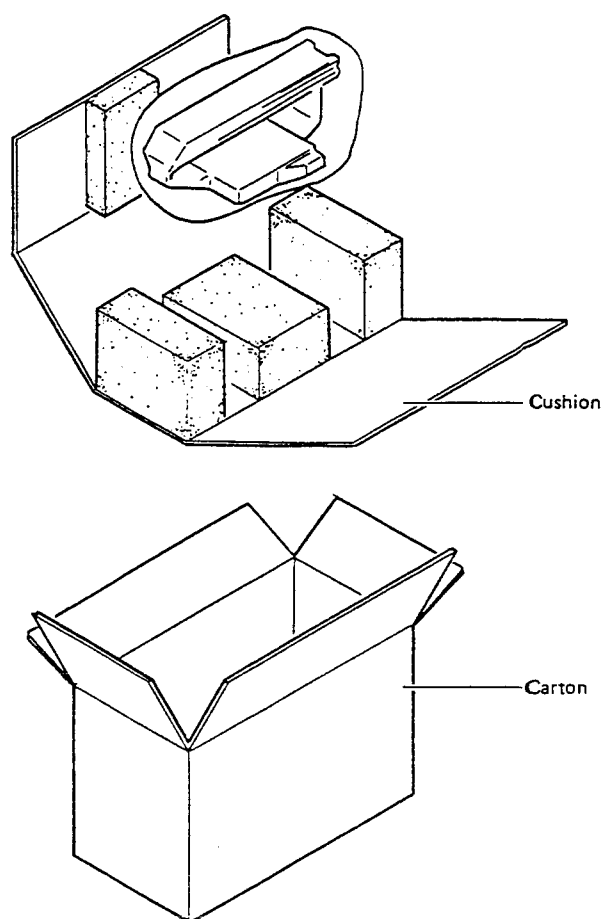




#### 4.2 SHOULDER PAD KA-220 REPACKING



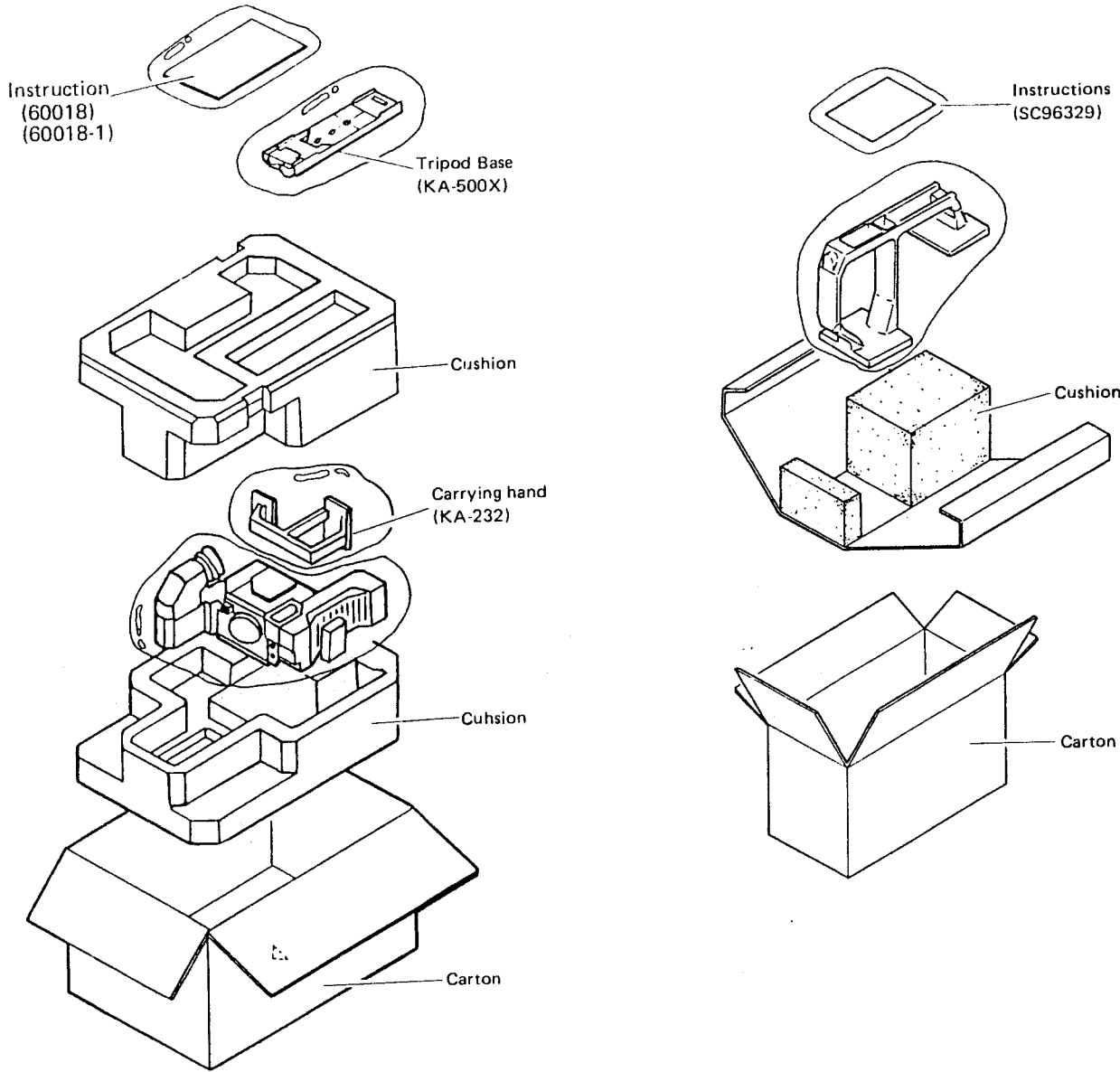
#### 4.3 CARRYING HANDLE KA-231 REPACKING





4.4 COLOR VIDEO CAMERA KY-R25 REPACKING

4.5 CARRYING HANDLE KA-232 REPACKING

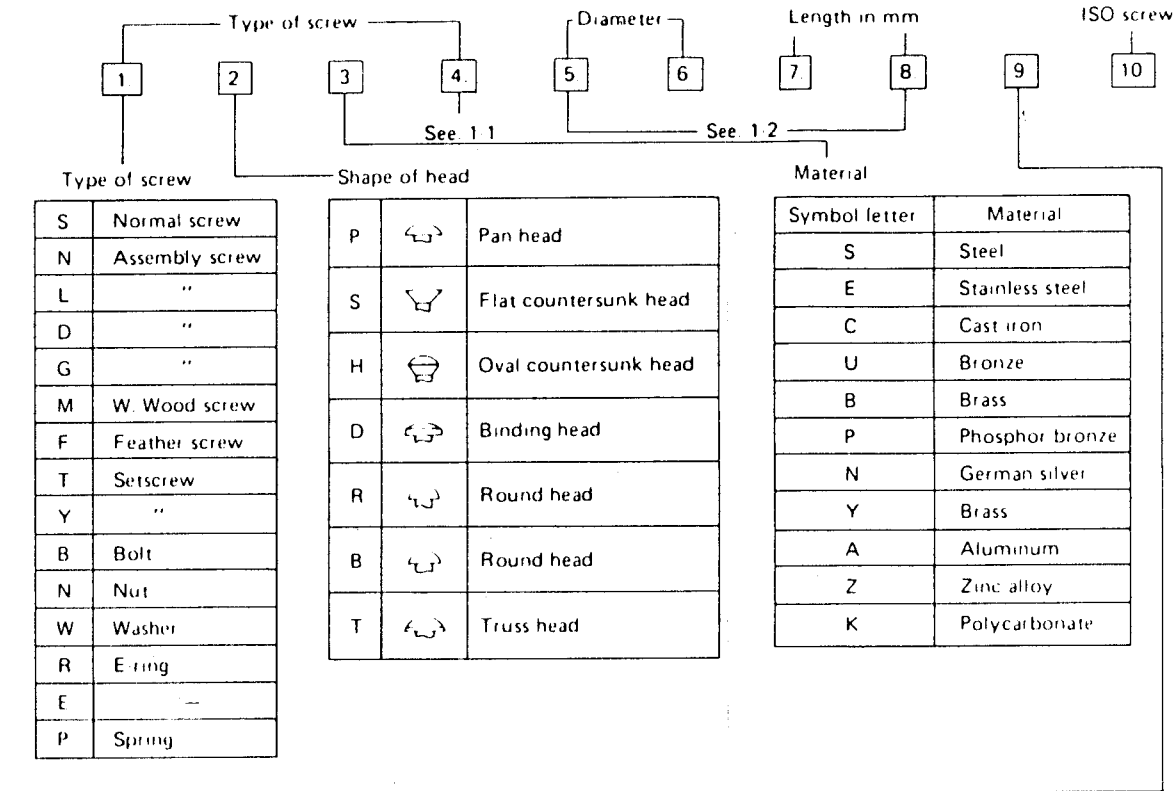


SECTION 5  
EXPLODED VIEW AND PARTS LIST

**Note:** Replacing marked  $\Delta$  parts, be sure to use parts specified for safety purposes.  
In this exploded views the part number of the screws and washers designate the type and dimensions of those items.  
The following examples will help you to decipher them.

5.1 STANDARD PART NUMBER CODING

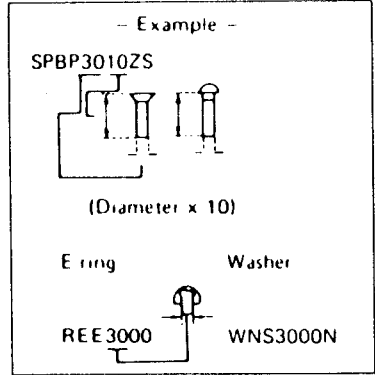
5.1.1 Screw coding



1-1 Type of screw

P	Cross Recessed head screw
A	Tapping screw
B	Tapping screw
T	Tapping screw
E	Tapping screw

1-2 Diameter and Length of screw



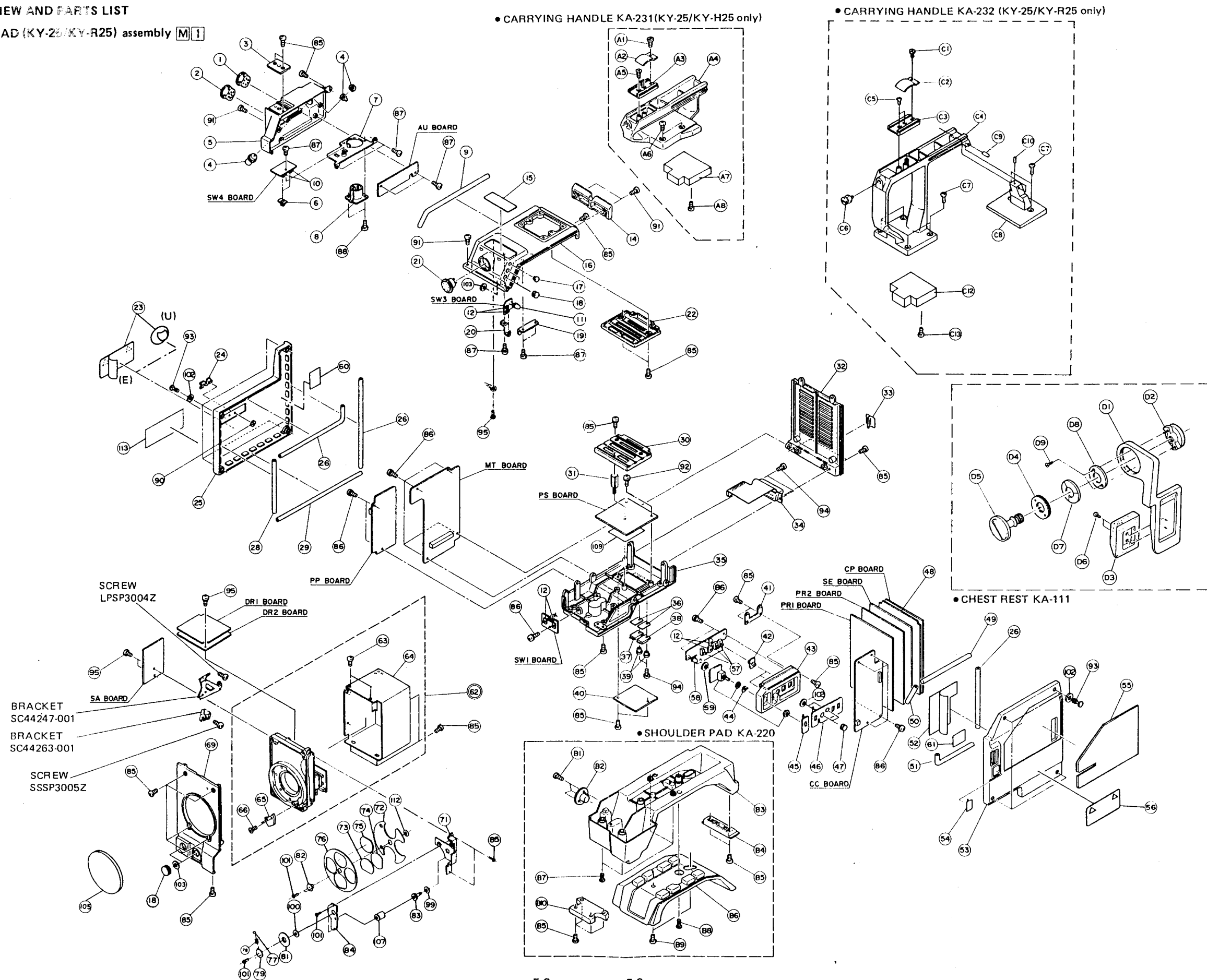
Surface treatment

Symbol letter	Surface treatment
Z	Galvanization, dichromic acid treatment (MFZn2 C)
N	Nickel plating (MFNi2, MFNi1)
R	Chrome plating (MBCr2, MBCr1)
G	Silver plating (SP4)
W	Nichrome platings
P	Phosphite treatment
B	Bronze plating
M	Black coloring after galvanization
A	Red coloring after galvanization
C	Blue coloring after galvanization
T	Green coloring after galvanization
V	Violet coloring after galvanization
F	Iron with black coloring



## 5.2 EXPLODED VIEW AND PARTS LIST

### 5.2.1 CAMERA HEAD (KY-25/KY-R25) assembly M1





— CAMERA HEAD (KY-H25) assembly parts list —

M I M M □ □ □ □

Symbol No.	Part No.	Part Name	Description
1	SCV0238-06S	Connector	MIC (6 P) J8
2	SCV0238-08S	Connector	LENS J1
3	SC30374-041	Shoe	
4	PU48567-001	BNC Connector	Nut included
5	SC20332-002	Connector Cover	
6	SC43431-011	Knob	
7	SC31033-001	Bracket	MIC (3 P)
8	SCV0316-03S	XLR-3 Connector	
9	SC43398-004	Rubber	S8 (AUX ON/OFF), S9 (STEREO ↔ MONO)
10	SCV0255-001	Slide Switch	
11	TLR102A	LED	LD 2 (SHUTTER)
12	SCV1639-001	Push Switch	S3 (DISP SELECT), S6 (VTR), S7 (AUTO SET), S10 (SHUTTER ON/OFF), S11 (SHUTTER MODE), S12 (ZEBRA)
13	—	—	
14	SC30988-012	Base	
15	Not Available	Serial No. Plate	
16	SC20307-002	Top Frame	
17	SC43451-001	LED LENS	
18	SC43406-001	Cap	
19	SC43528-001	Bracket	
20	SC43407-001	Bracket	
21	SCV0238-06S	Connector	VF
22	SC30989-002	Upper Rail	U version
23	SC43948-001	Label	E version
24	PU54392-1	Label	PGD30011-1
25	Not Available	JVC Logo Mark	
26	SC43398-007	Rubber	
27	—	—	
28	SC43398-002	Rubber	
29	SC43398-006	Rubber	
30	SC30989-001	Lower Rail	
31	SC43651-001	Stud	
32	SC20309-001	Rear Frame	U version
33	SC41957-012	Caution Label	
34	SCV1277-003	Flexible Wire Assy	
35	SC10070-001	Bottom Frame	
36	SCV1388-001	Mica Sheat	
37	TA78005AP	IC	
38	2SB856(C)	Transistor	
39	SCV1664-026	Spacer	
40	SC43401-001	Cover	
41	SC43529-001	Bracket	
42	SC43403-001	Knob	
43	SC30987-011	Switch Cover	
44	SCV1313-001	Toggel Switch	S1 (OPERATE)
45	SC43404-002	Switch Panel	
46	SC43405-011	Switch Panel	
47	SC41214-003	Knob	
48	—	—	
49	SC43398-002	Rubber	
50	SC43398-003	Rubber	
51	SC43398-008	Rubber	VR Location
52	SC43659-011	Label	
53	SC20399-001	R. Side Cover	
54	SC41566-004	Label	Filter disc
55	SC44253-002	Pad	

Symbol No.	Part No.	Part Name	Description
56	SC43658-001	Label	U version
57	PU54392-1	Label	E version
58	SCV0389-011	Slide Switch	S2 (HI-SENS), S4 (BARS), S5 (W. BAL)
59	SLB-26UR5	LED	LD 1 (POWER)
60	SC43656-085	Spacer	
61	SC41702-006	Sheet	VR Location
62	SCM0466-N0A	Optical Block Ass'y	(63), (64), (65), (66), (110), (111) included (for U version)
63	—	—	(63), (64), (65), (66), (110), (111) included (for E version)
64	SC31231-001	Shield Cover	
65	SC40794-001	Lever	
66	SSSP2604M	Screw	M2.6 × 4
67	—	—	
68	SC44247-001	Bracket	
69	SC20308-002	Front Frame	
70	—	—	
71	SC30997-011	Filter Base	
72	SC43232-002	Filter Sheet	
73	SC43229-001	Filter	(1) 3200 K
74	SC43230-001	Filter	(2) 5600 K
75	SC43231-001	Filter	(3) 5600 K + 25% ND
76	SC30998-001	Filter Wheel	
77	SC40465-024	Steal Ball	
78	SC42441-001	Spring	
79	SC43875-001	Shaft	
80	—	E Ring	
81	SC31151-001	Knob	
82	SC43422-001	Shaft	
83	SC43227-011	Gear	
84	SC43233-011	Filter Cover	
85	SDSP3006M	Screw	M3 × 6
86	LPSP3006Z	Screw	M3 × 6
87	SDSP3004N	Screw	M3 × 4
88	SPSP2606N	Screw	M2.6 × 6
89	—	—	
90	SC44178-018	Spring Nut	
91	SDSP3008M	Screw	M3 × 8
92	LPSP3006Z	Screw	M3 × 6
93	SC43397-002	Screw	
94	SDSP2606M	Screw	M2.6 × 6
95	LPSP3004Z	Screw	M3 × 4
96	LPSP2604Z	Screw	M2.6 × 6
97	—	—	
98	—	—	
99	Q03093-826	Washer	
100	SC43979-001	Spacer	
101	SPSK2050M	Screw	M2 × 5
102	Q03093-825	Washer	
103	SC43650-011	Sheet	
104	—	—	
105	SC43825-002	Mount Cap	
106	—	—	
107	SC43199-002	Bearing	
108	—	—	
109	SC43974-001	Sheet	
110	—	—	
111	—	—	
112	Q03093-841	Washer	
113	SC44177-021	Label	Caution Label



— CARRYING HANDLE (KA-231) assembly parts list —

Symbol No.	Part No.	Part Name	Description
A1	C40970	Screw	M3 x 6
A2	C40936	Spring	
A3	SC40886-001	Guide	
A4	SC20316-021	Handle	
A5	SSSP3006N	Screw	
A6	SC43390-001	Screw	
A7	SC44083-011	Cover	
A8	SDSP3004N	Screw	

— SHOULDER PAD (KA-220) assembly parts list —

Symbol No.	Part No.	Part Name	Description
B1	SSSP3006M	Screw	M3 x 6
B2	SC40928-001	Lock Ring	
B3	SC10067-002	Bottom Frame	
B4	SC43394-001	Rear Base	
B5	BYS3010M	Screw	
B6	SC20333-003	Shoulder Pad	M4 x 8
B7	SC43390-001	Screw	
B8	SC43390-002	Screw	
B9	SDSP4008R	Screw	
B10	SC43393-001	Front Base	

— CARRYING HANDLE (KA-232) assembly part list —

Symbol No.	Part No.	Part Name	Description
C1	C40970	Screw	M3 x 6
C2	C40936	Spring	
C3	SC40886-001	Guide	
C4	SC20340-011	Handle	
C5	SSSP3006N	Screw	
C6	PU53202	Hook Holder	M3 x 4
C7	SC43390-001	Screw	
C8	SC31061-001	Handle Base	
C9	SC43532-001	Pin	
C10	YCS3004M	Screw	
C11	—	—	
C12	SC44083-011	Cover	
C13	SDSP3004N	Screw	

— CHEST REST (KA-111) assembly part list —

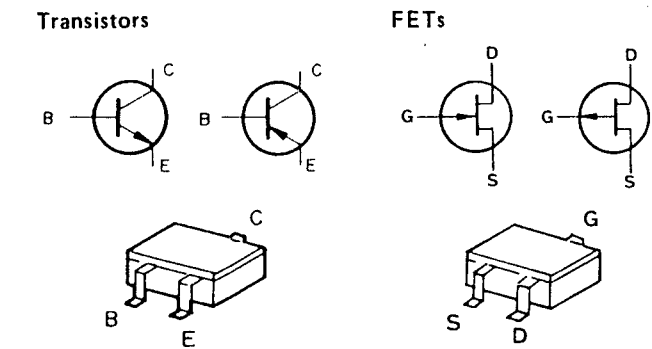
Symbol No.	Part No.	Part Name	Description
D1	SC20114-001	Pad Arm	
D2	SC40967-002	Gear	
D3	SC30387-002	Cushion	
D4	SC40973-001	Adjust Plate	
D5	SC40975-002	Lock Knob	
D6	SDSP3006M	Screw	M3 x 6
D7	SC40974-001	Spring Washer	M3 x 6
D8	SC40970-001	Lock Plate	
D9	SSSP3006N	Screw	

SECTION 6  
CHARTS AND DIAGRAMS

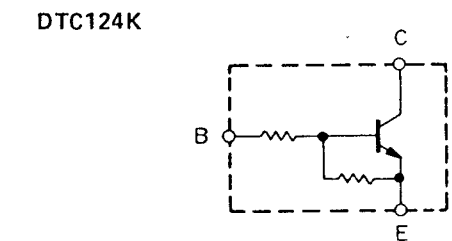
■ SCHEMATIC DIAGRAM NOTES

- Schematic safety precaution
- Parts are safety related aprts. When replacing them, be sure to use the specified parts.
- Voltage and waveform measurements.
- Voltage: Measured with digital voltmeter in DC range; iris closed.
- Waveform: Grey scale illuminated at more than 4000 lux at 3200 K lighting.

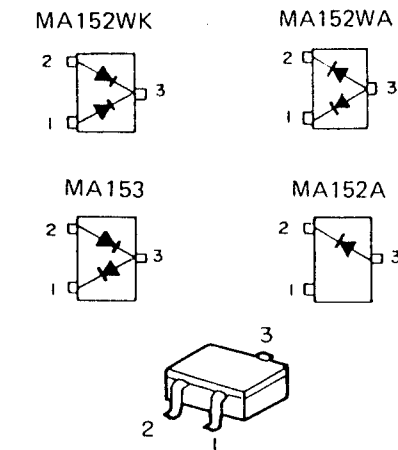
● Chip transistors and FETs



● Digital Transistor



● Chip diodes



■ REPLACING SUBMINIATURE "CHIP" PARTS

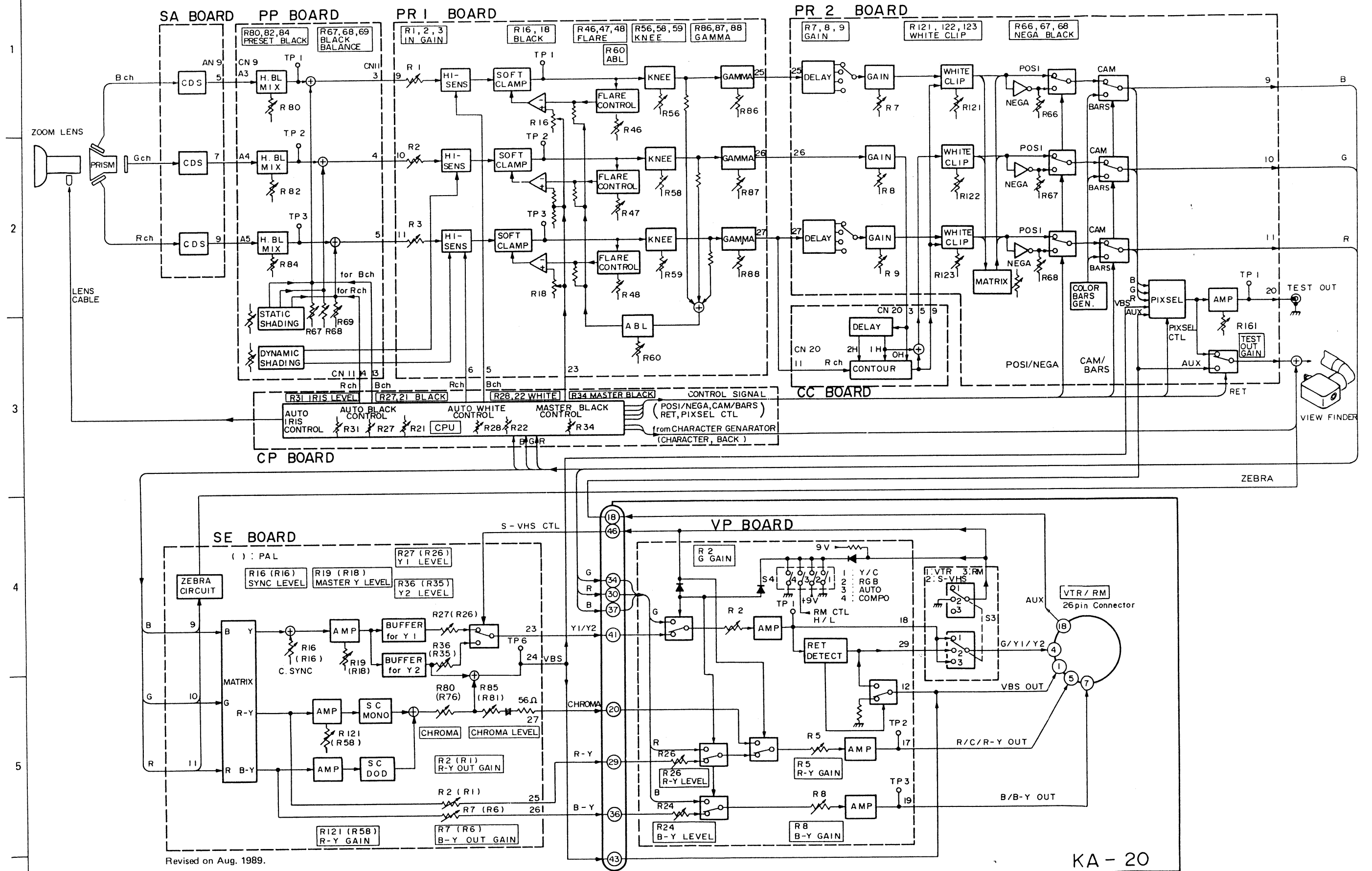
- Some resistors, shoring jumpers (0  $\Omega$  resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Soldering cautions:
  - 1) Do not apply heat for more than 3 seconds.
  - 2) Avoid using a rubbing stroke when soldering.
  - 3) Discard removed chips; do not reuse them.
  - 4) Supplementary cementing is not required.
  - 5) Use care not to scratch or otherwise damage the chips.
- Resistors and capacitors are not interchangeable with chip parts which is used in the color cameras BY-110, KY-210, etc., because of size difference. In case of part order, refer to the section "ELECTRICAL PARTS LIST".

■ TERMINAL LOGIC

- Top bar of terminal name shows input or output logic.
- Top bar shows, the control circuit become active at negative (low) logic input for example.



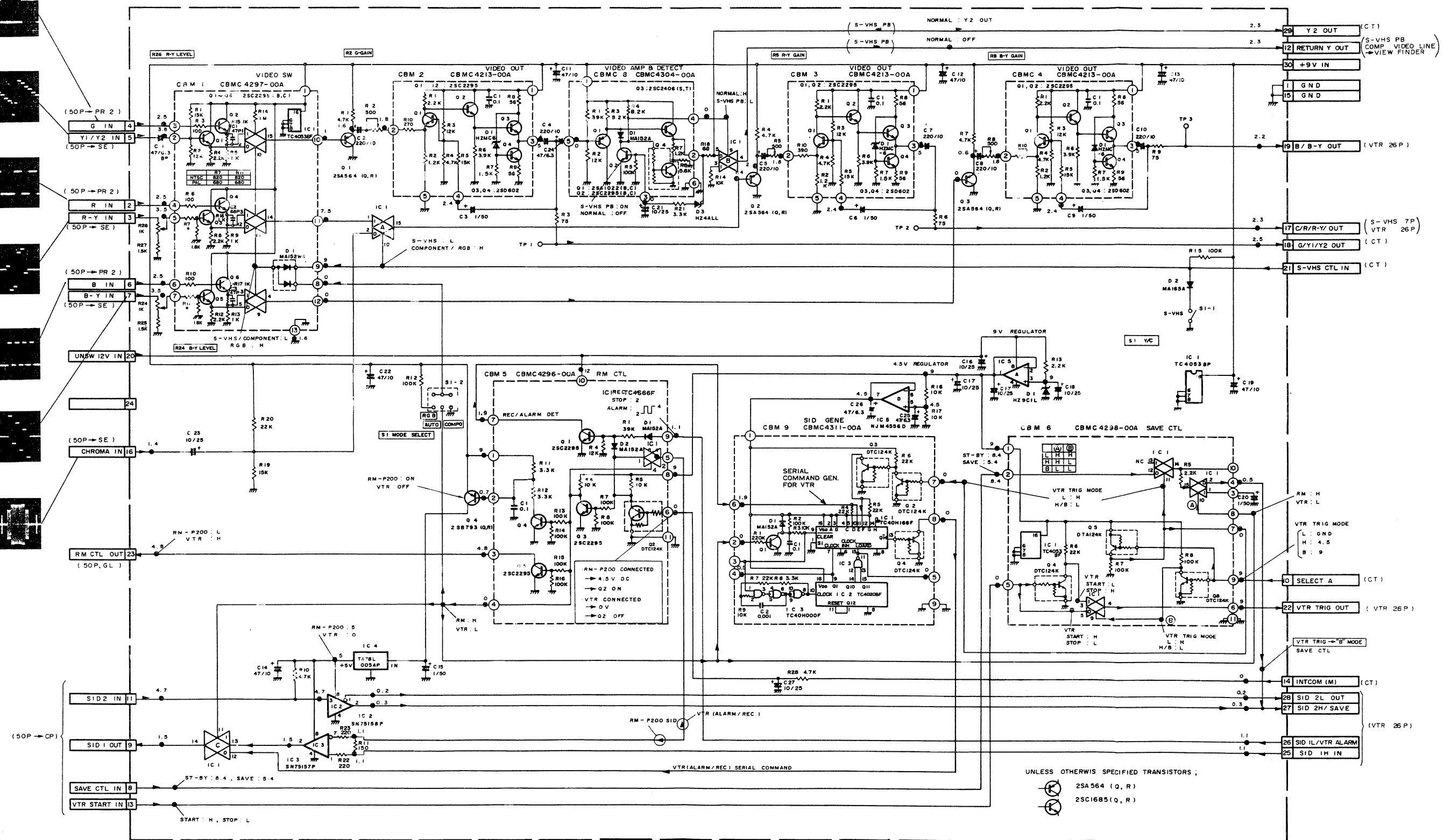
# 6.1 3-CCD COLOR CAMERA VIDEO SIGNAL BLOCK DIAGRAM





# 6.2 VP BOARD SCHEMATIC DIAGRAM

COLOR BARS: ON, H-rate



- REVISED APRIL 1989 -



A

B

C

VP

GL

E

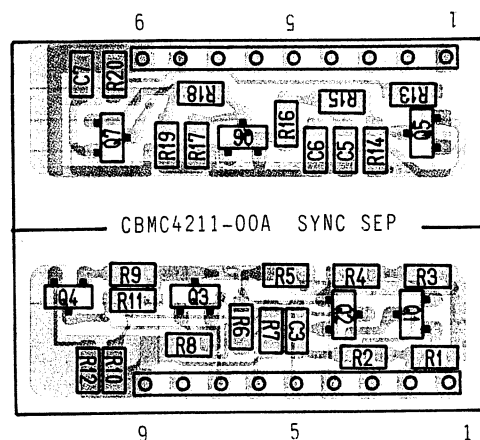
F

G

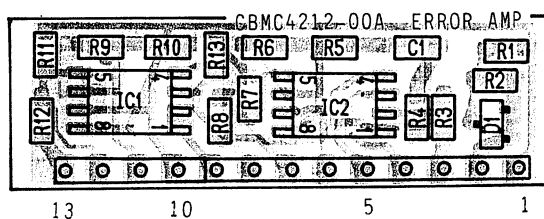
H

## 6.3 GL CIRCUIT BAORDS

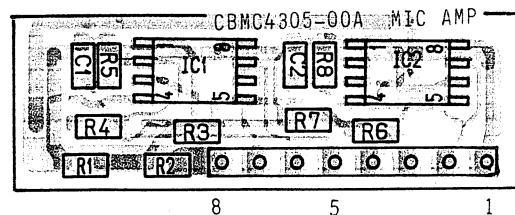
— SYNC SEP board (CBM1) [CBMC4211-00A] —



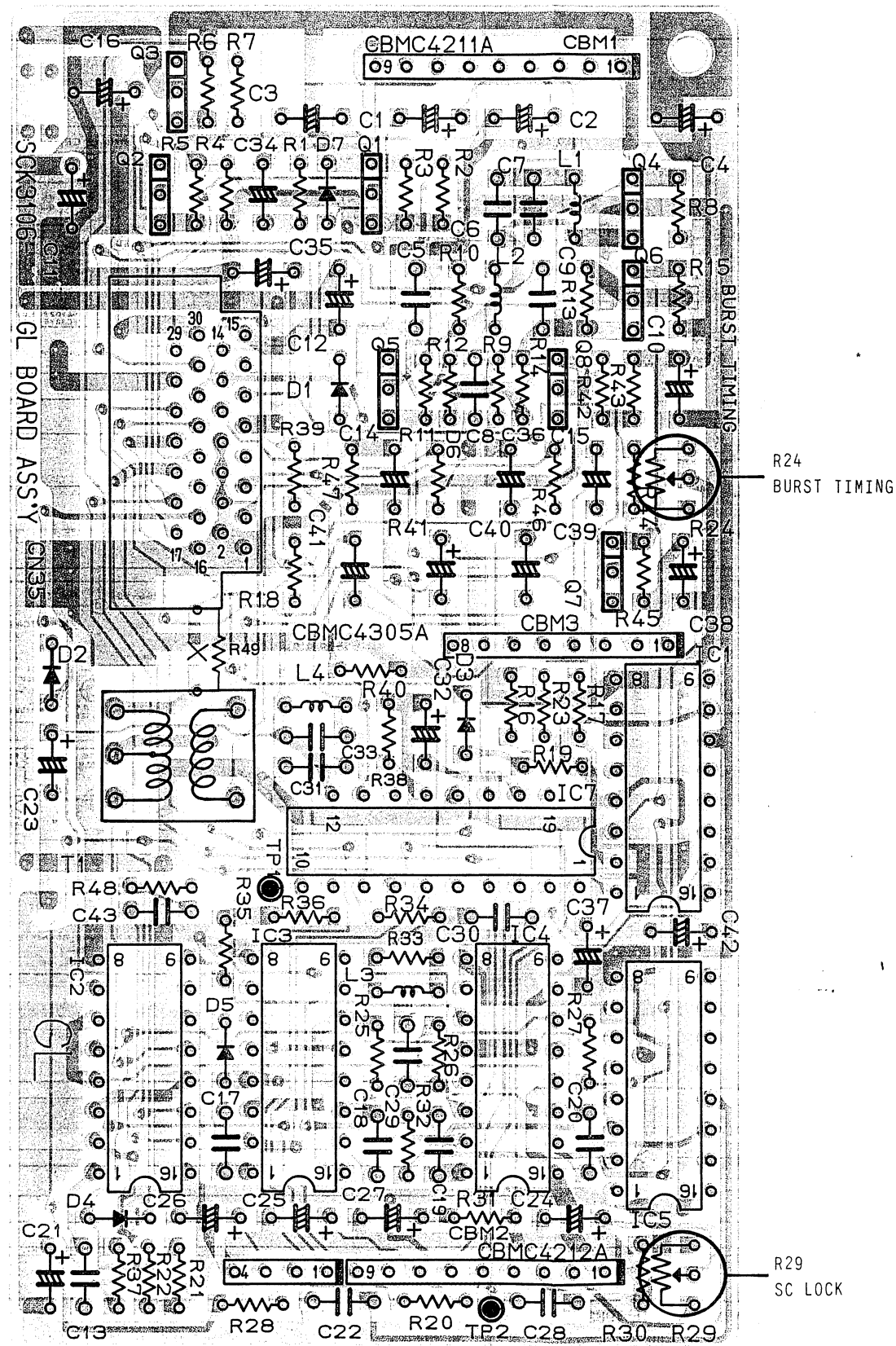
— ERROR AMP board (CBM2) [CBMC4212-00A] —



— MIC AMP board (CBM3) [CBMC4305-00A] —



— GL board —

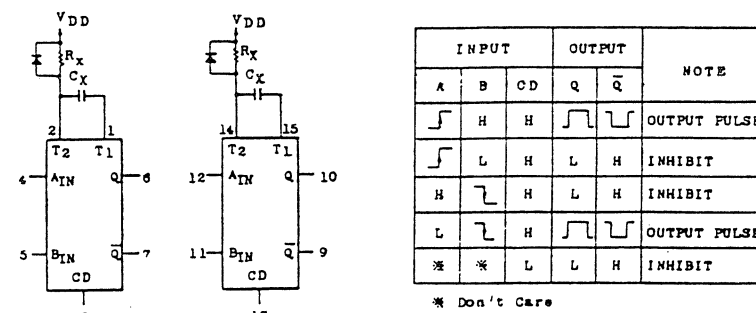


X : Cut off pattern

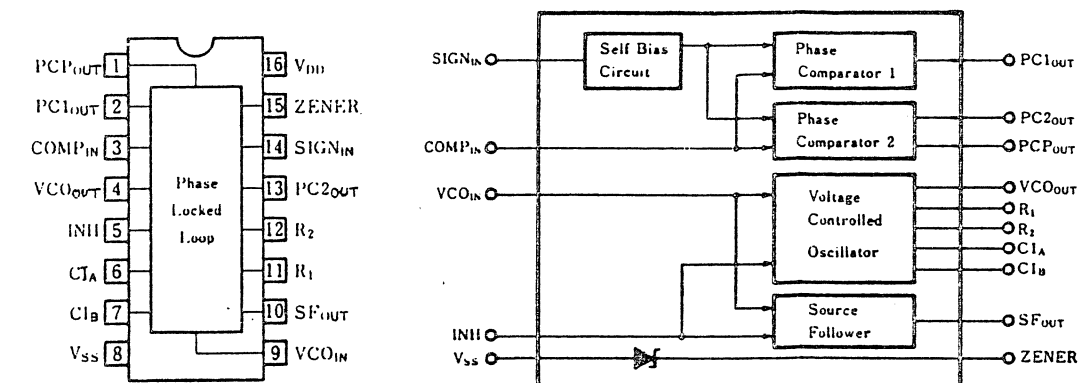


# 6.4 GL BOARD SCHEMATIC DIAGRAM

TC4528 DUAL MONO-MULTIVIBRATOR [TOSHIBA]



HD14046B PHASE LOCKED LOOP [HITACHI]



0.8 V<sub>p-p</sub>, H-rate

COLOR BARS

H-rate

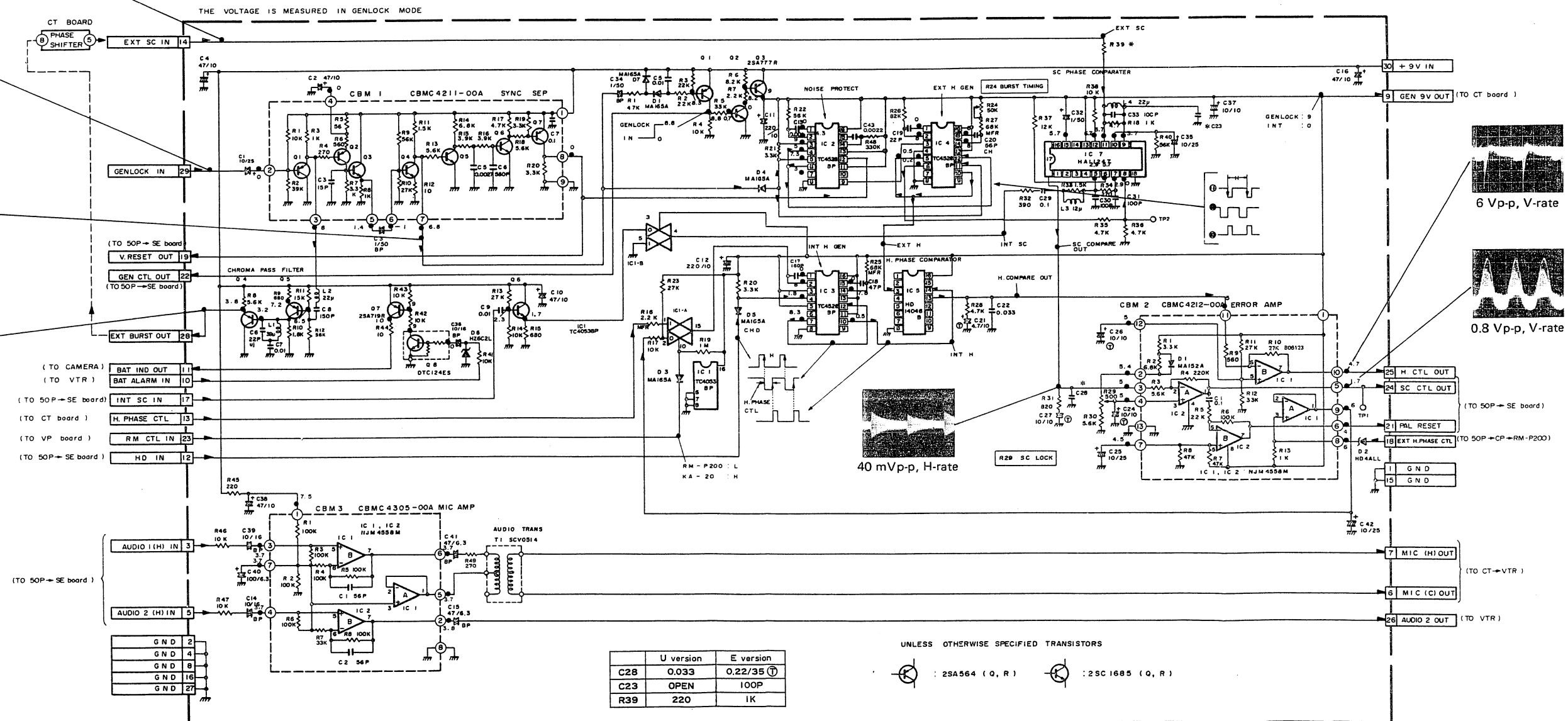
7 V<sub>p-p</sub>, H-rate

0.1 V<sub>p-p</sub>, H-rate

6 V<sub>p-p</sub>, V-rate

0.8 V<sub>p-p</sub>, V-rate

40 mV<sub>p-p</sub>, H-rate



	U version	E version
C28	0.033	0.22/35 (T)
C23	OPEN	100P
R39	220	1K

UNLESS OTHERWISE SPECIFIED TRANSISTORS

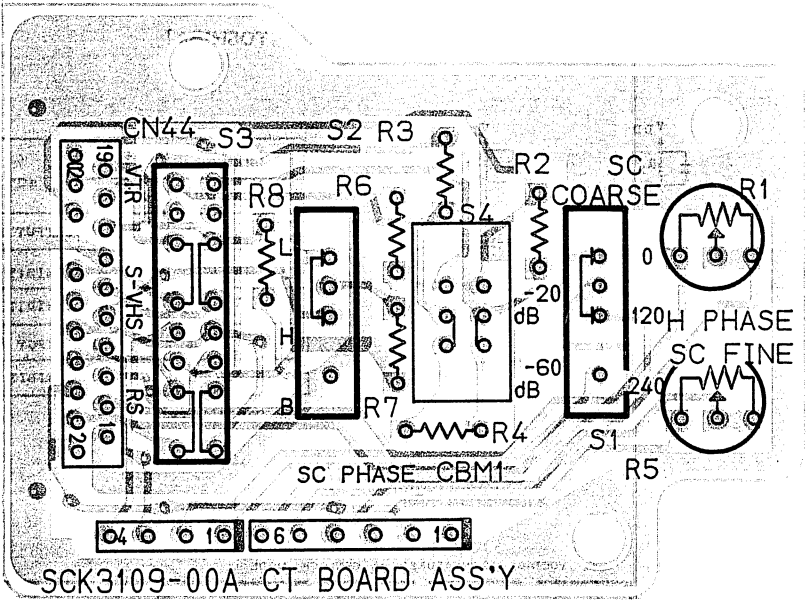
29A564 (Q, R) 2SC1685 (Q, R)

Revised on May, 1991.

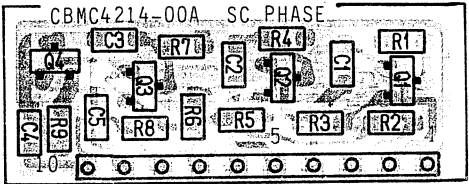


GL	CT	A	B	C	D
----	----	---	---	---	---

6.5 CT CIRCUIT BOARD

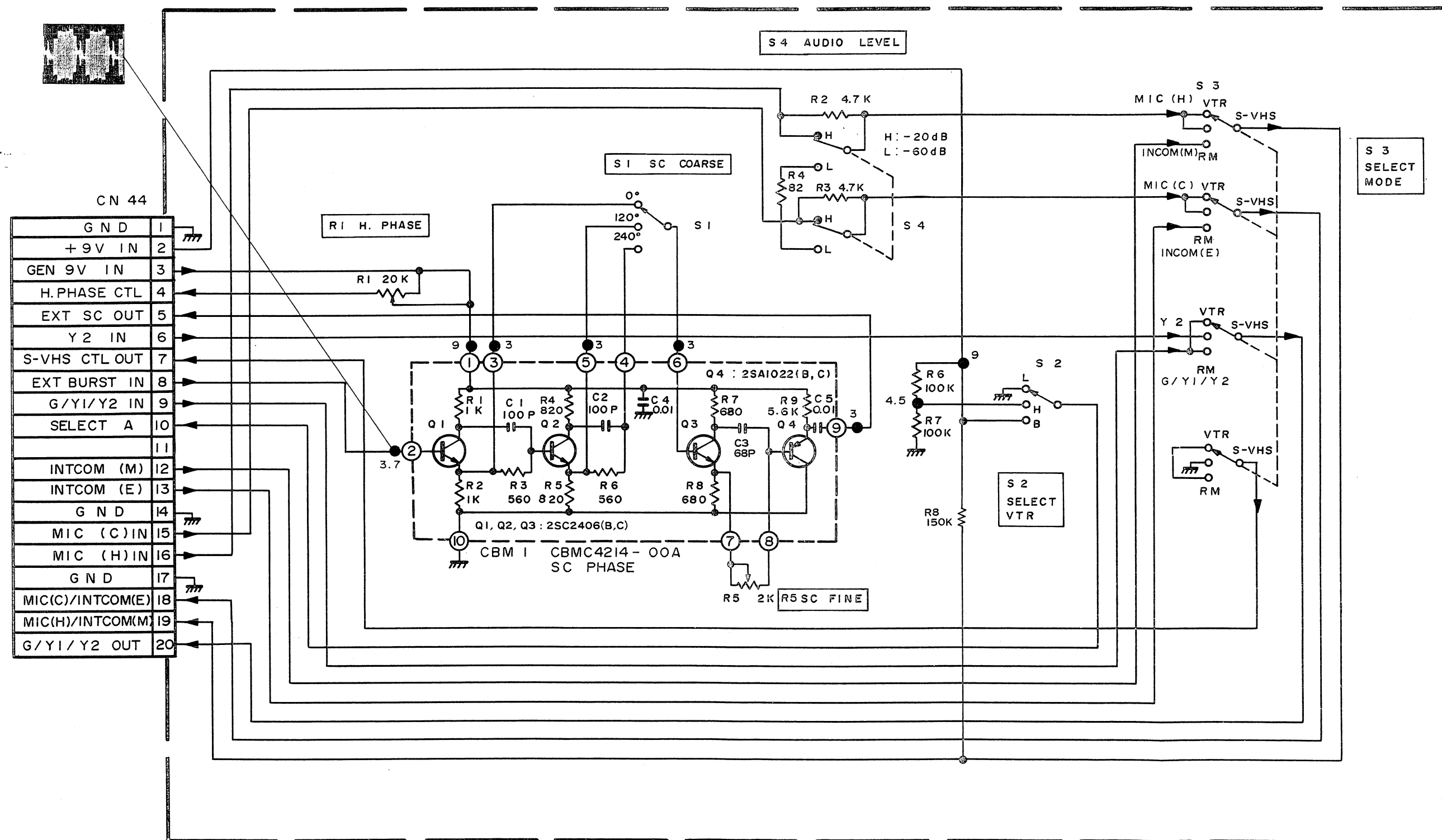


— SC PHASE board (CBM1) [CBMC4214-00A] —





# 6.6 CT BOARD SCHEMATIC DIAGRAM









## 1



2

4

5

6



A

B

C

D

CP

E

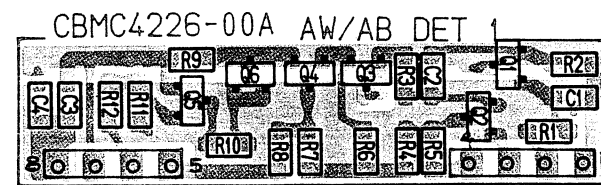
F

G

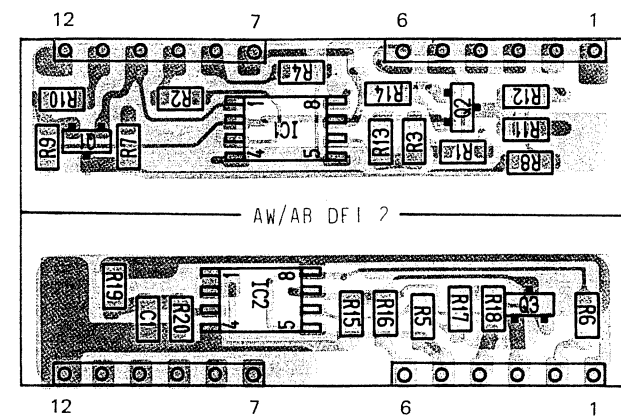
H

## 6.18 CP CIRCUIT BOARDS

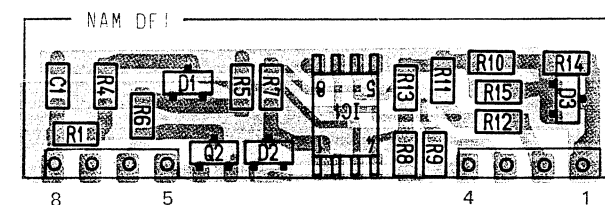
— AW/AB DET1 board (CBM1/CBM2/CBM3) [CBMC4226-00A] —



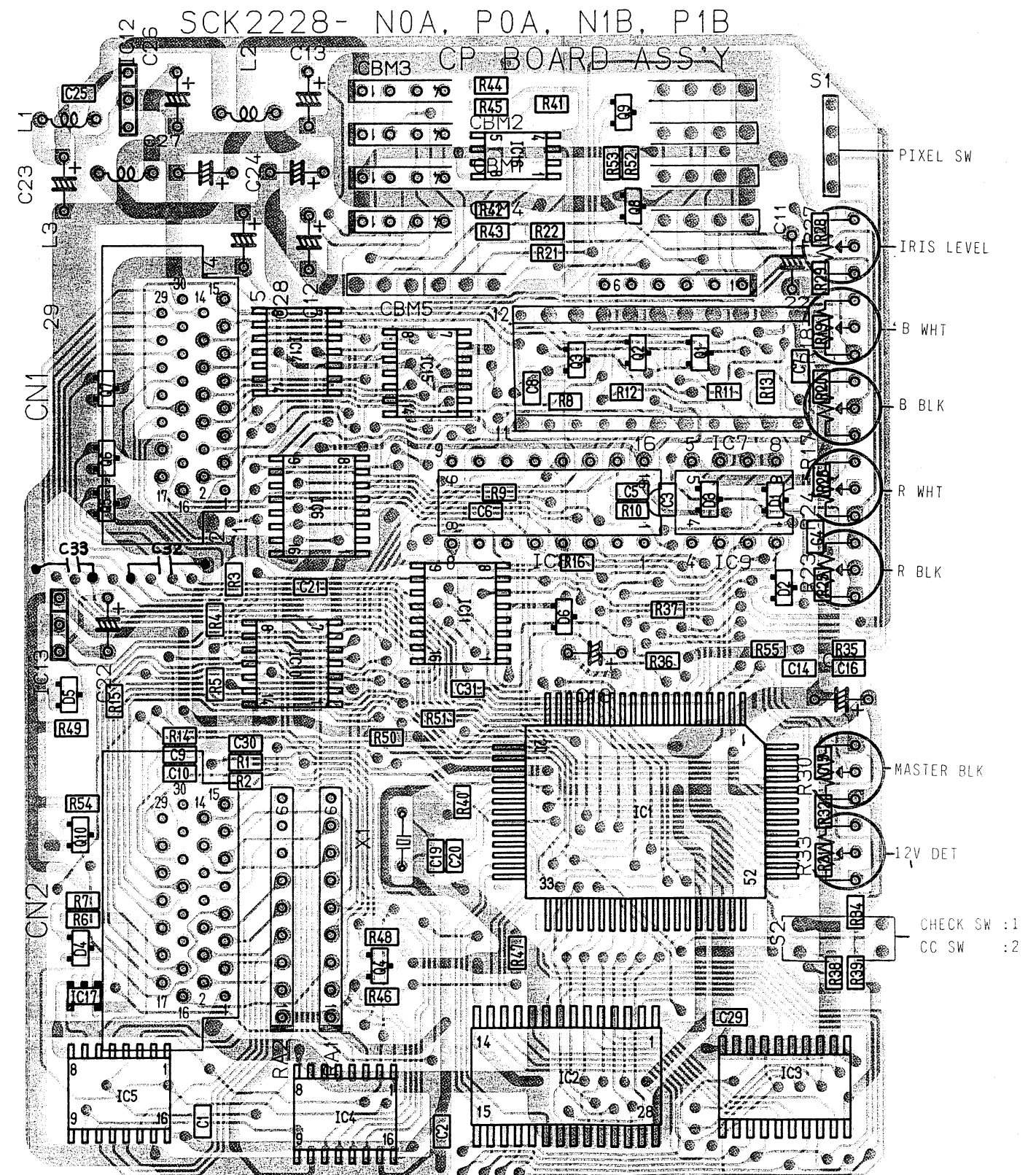
— AW/AB DET2 board (CBM5) [CBMC4306-00A] —



— NAM DET board (CBM4) [CBMC4303-00A] —



— CP board —



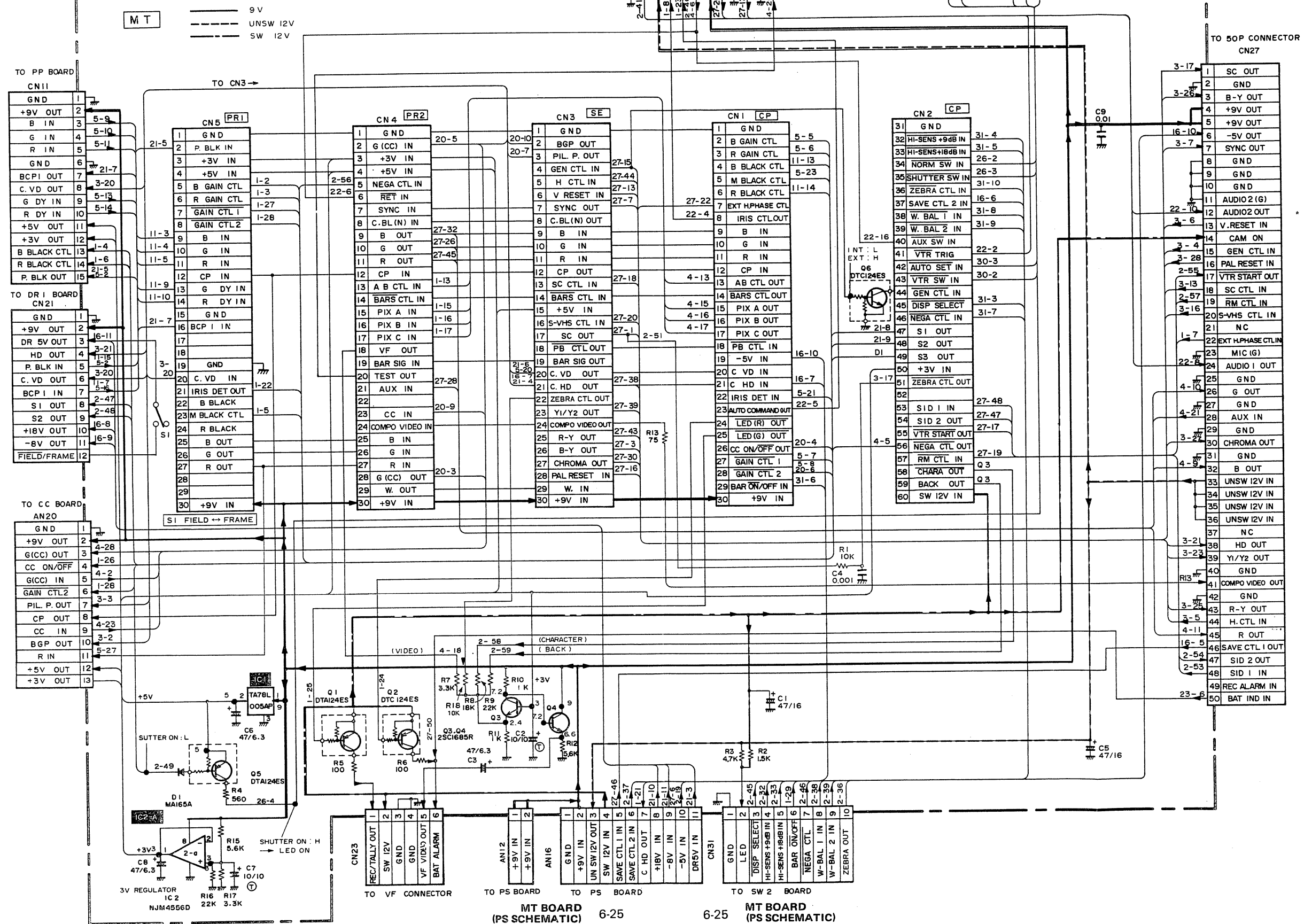


1  
2  
3  
4  
5  
6





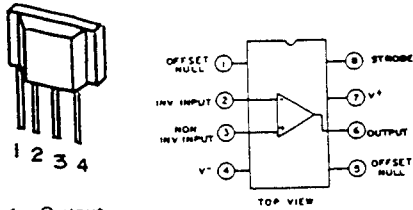
6.24 MT BOARD SCHEMATIC DIAGRAM





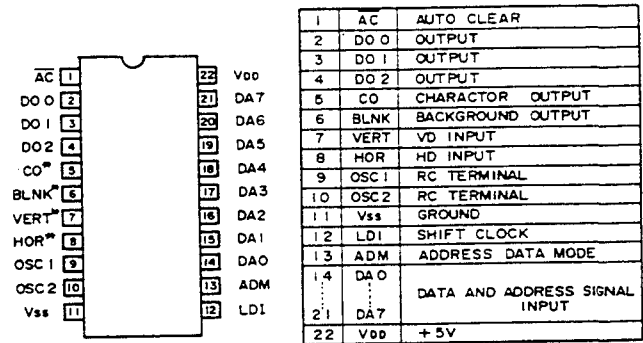
## 6.28 SCHEMATIC DIAGRAM OF ICs

**CA3130E [RCA]**  
(OP. Amp.)

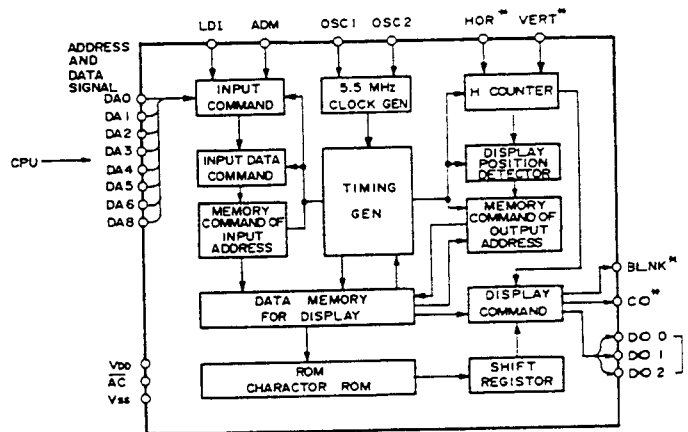
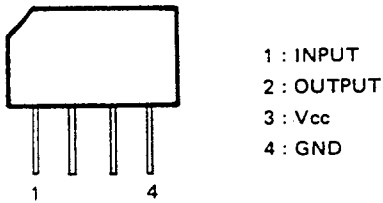


- 1 : Output
- 2 : V<sub>cc</sub>
- 3 : Input
- 4 : GND

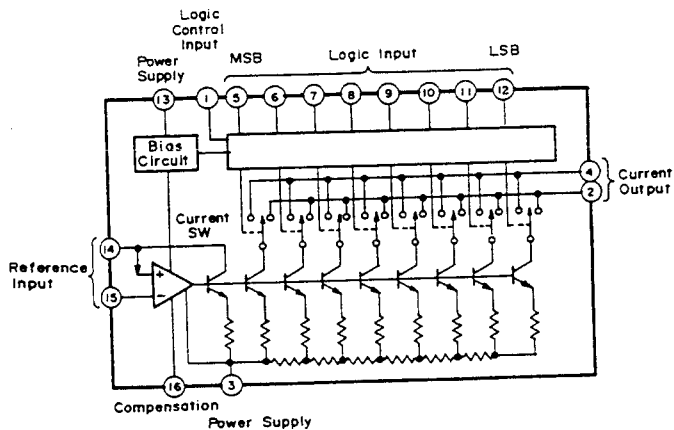
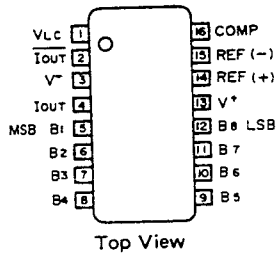
**M50452-001P [MITSUBISHI]**  
(Character Generator)



**DN819 [MATSUSHITA]**  
(Integrated Injection Logic Frequency Divider)

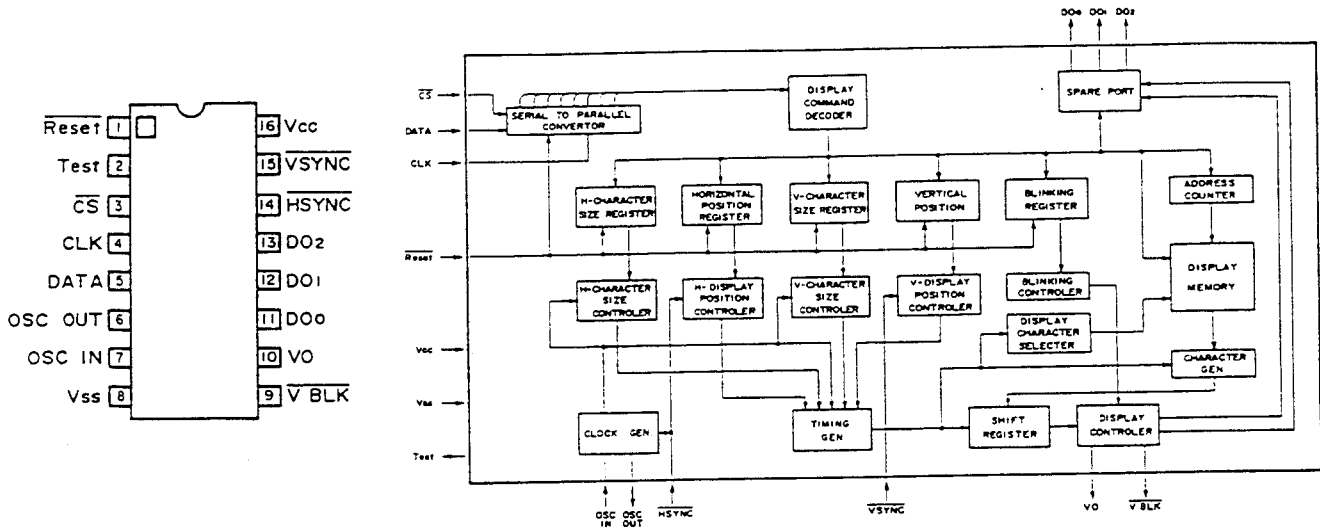


**IR9K08 [SHARP]**  
(8-bit D/A Converter)

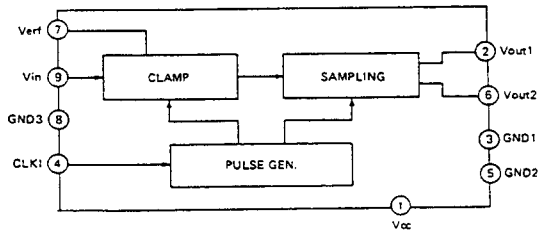




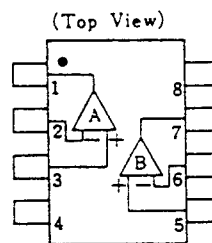
**MB89009P-G-106 [FUJITSU]**  
(Character Generator)



**MC-8088B [NEC]**  
Sampling

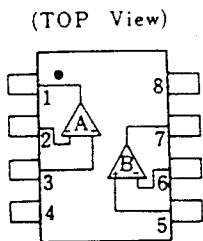


**NJM2068MD [JRC]**  
**NJM4558M/NJM4558D [JRC]**  
**NJM4560M [JRC]**  
**NJM4556D [JRC]**  
**LM2904M [TEXAS]**  
(Dual OP. Amplifier)



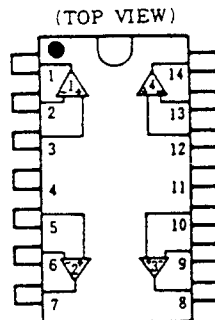
- Pin
1. A OUTPUT
  2. A-INPUT
  3. A+INPUT
  4. V-
  5. B+INPUT
  6. B-INPUT
  7. B OUTPUT
  8. V+

**NJM062M [JRC]**  
(J-FET Input Dual OP. Amps)



1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V-
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. V+

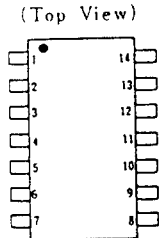
**NJM2902M [JRC]**  
(Quad OP. Amplifire)



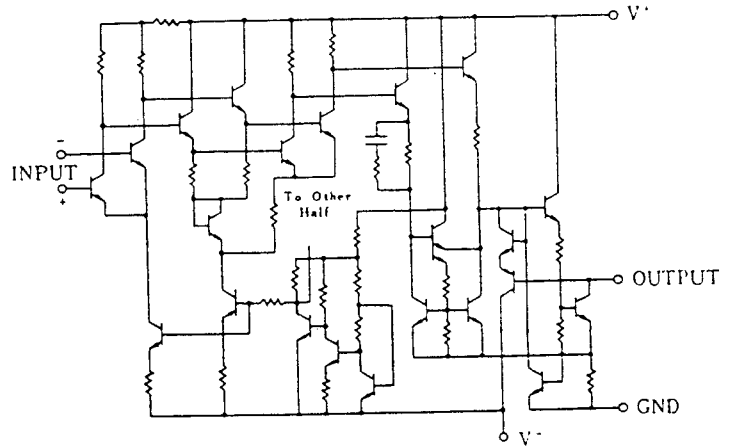
- Pin
- |             |              |
|-------------|--------------|
| 1. OUTPUT 1 | 8. OUTPUT 3  |
| 2. -INPUT 1 | 9. -INPUT 3  |
| 3. +INPUT 1 | 10. +INPUT 3 |
| 4. V-       | 11. GROUND   |
| 5. +INPUT 2 | 12. +INPUT 4 |
| 6. -INPUT 2 | 13. -INPUT 4 |
| 7. OUTPUT 2 | 14. OUTPUT 4 |



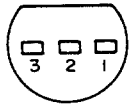
**NJM319M [JRC]**  
(Voltage Comparator)



1	NC
2	NC
3 (2)	GND 1
4 (3)	+INPUT
5 (4)	-INPUT
6 (5)	V <sup>-</sup>
7 (6)	OUTPUT 2
8 (7)	GND 2
9 (8)	+INPUT 2
10 (9)	-INPUT 2
11 (10)	V <sup>+</sup>
12 (11)	OUTPUT 1
13	NC
14	NC



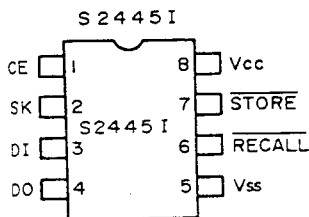
**NJM79L05A [JRC]**  
(Three Terminal Negative Fixed Voltage Regulator)



(Bottom View)

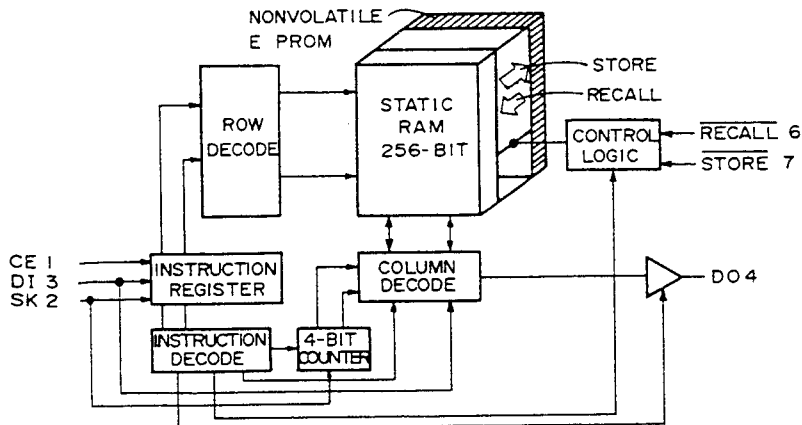
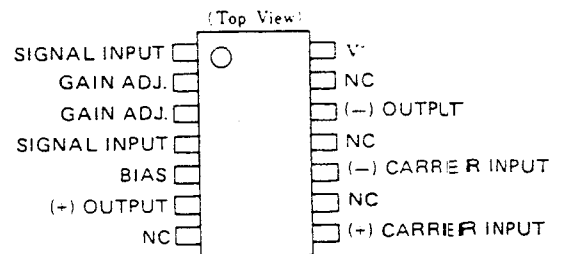
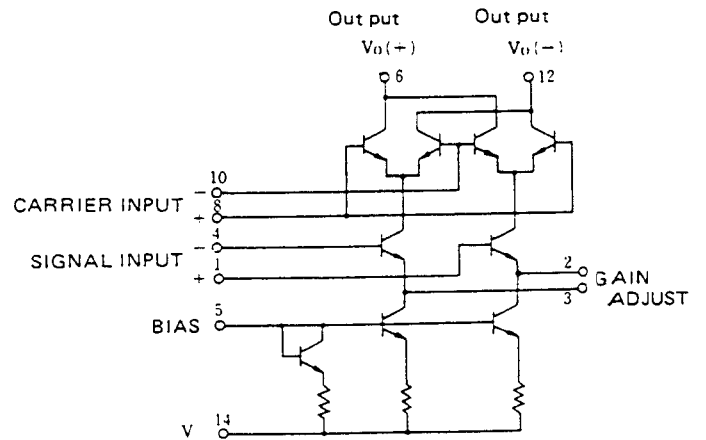
1. INPUT
2. OUTPUT (-5 V)
3. GND

**S-2444-101 [SEIKO]**  
(Non-Volatile Cmos Static Ram)



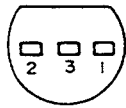
CE	: CHIP ENABLE
SK	: SERIAL CLOCK
DI	: SERIAL DATA IN
DO	: SERIAL DATA OUT
RECALL	: RECALL
STORE	: STORE
Vcc	: +5V
Vss	: GROUND

**RC1496M (Double Balance Modulator/Demodulator)**



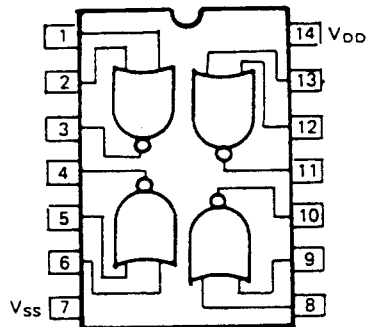


TA78005AP [TOSHIBA]  
TA78L008AP [TOSHIBA]  
(Three Terminal Positive Fixed Voltage Regulator)

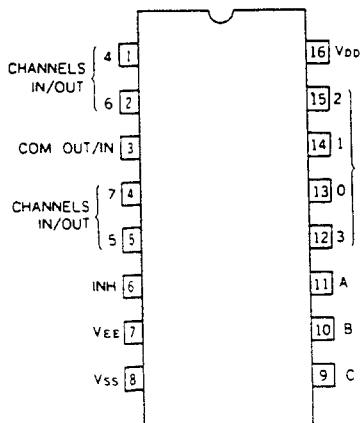


1. INPUT
2. OUTPUT
3. GND

TC4001BP/BF [TOSHIBA]  
(Nor Gate)



TC4051BF (MULTIPLEXER/DEMULTIPLEXER) [TOSHIBA]



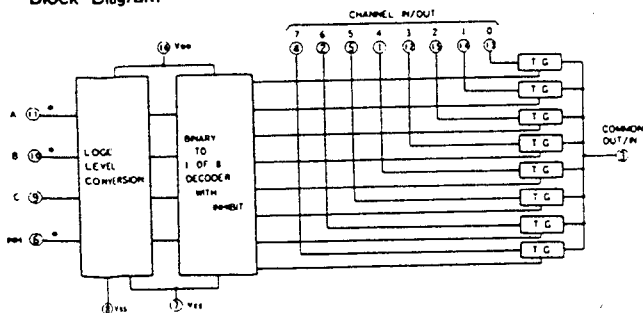
TRUTH TABLE

INPUT STATES				"ON" CHANNEL(S)
INHIBIT	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	NONE

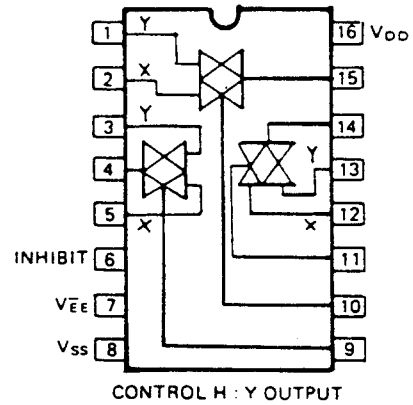
X = Don't care

\*CHANNELS IN/OUT TOP VIEW

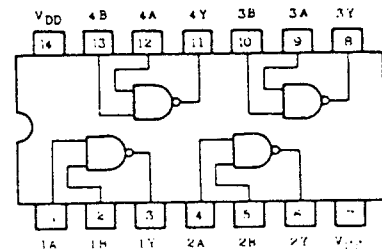
Block Diagram



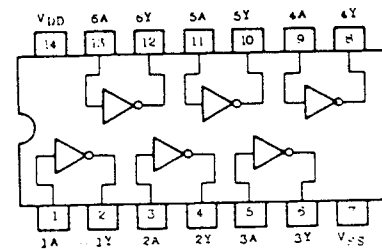
TC4053BP/BF [TOSHIBA]  
(Multiplexer/Demultiplexer)



TC40H000F [TOSHIBA]  
(Quad 2-Input Nand Gate)

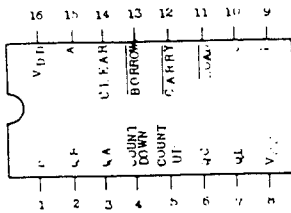


TC40H004F/TC74HC04F [TOSHIBA]  
(Hex Inverter)





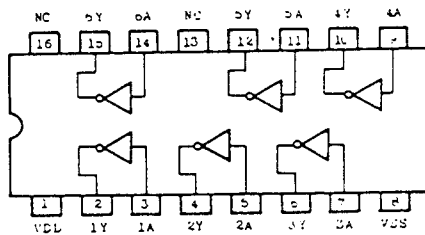
**TC40H193F [TOSHIBA]**  
(Synchronous 4-Bit Binary Up/Down Counter  
Dual Clock With Clear)



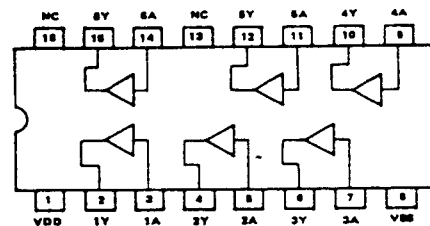
COUNT UP	COUNT DOWN	LOAD	CLEAR	ACTION
	H	H	L	COUNT UP
	H	H	L	NO COUNT
H		H	L	COUNT DOWN
H		H	L	NO COUNT
•	•	L	L	PRESET
•	•	•	H	RESET

• Don't care

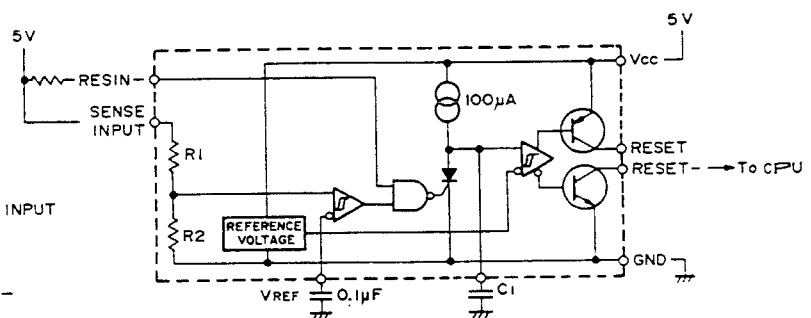
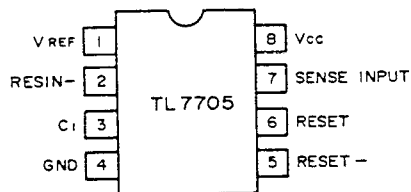
**TC50H000F [TOSHIBA]**  
(Hex Buffer/Converter Inverting Type)



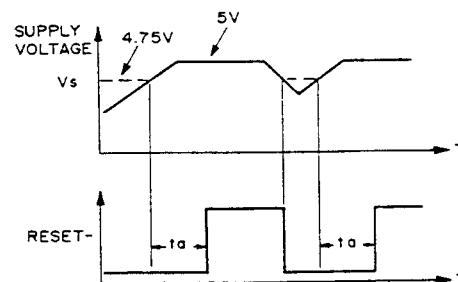
**TC50H001F [TOSHIBA]**  
(Hex Buffer/Converter Non-Inverting Type)



**TL7705 [TEXAS]**  
(Reset Pulse Generator)

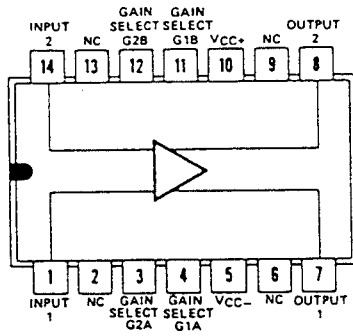


$R1 = 9.0 K\Omega$ ,  $R2 = 10.0 K\Omega$

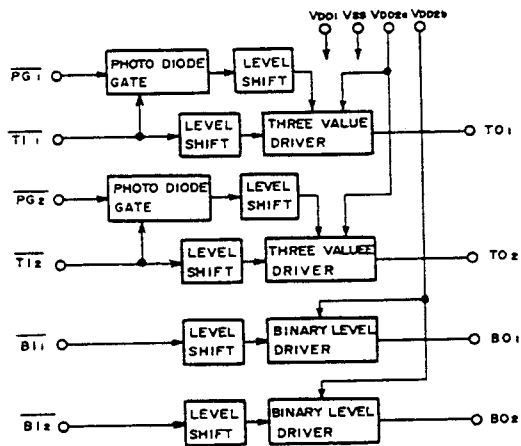
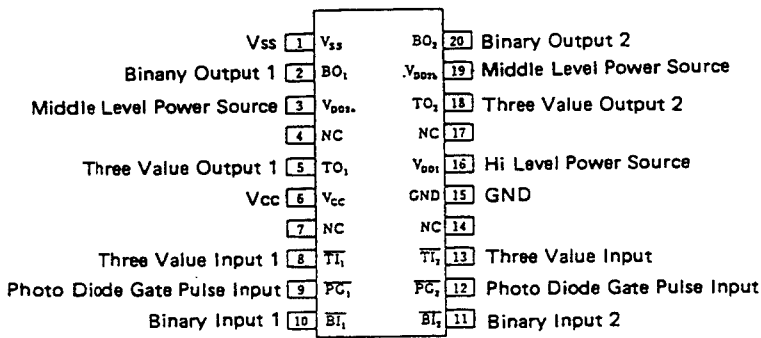




**UA733CN [TEXAS]**  
(Differential Video Amplifier)



**UPD6147G [NEC]**  
(CCD Driver)





## SECTION 7

### ELECTRICAL PARTS LIST

#### SAFETY PRECAUTION

Parts identified by the  $\triangle$  symbol are critical for safety. Replace only with specified part numbers. For maximum reliability and performance, all other replacement parts should be identical to those specified.

#### ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS — All resistance values are in ohms ( $\Omega$ ).

K : 1 000  
M : 1 000 000  
CR : Carbon Resistor  
VR : Variable Resistor (Potentiometer)  
MFR : Metal Film Resistor  
Chip R : Chip Resistor

CAPACITORS — All capacitance values are in  $\mu\text{F}$ , unless otherwise indicated.

P :  $\mu\mu\text{F}$   
C Cap : Ceramic Capacitor  
E Cap : Electrolytic Capacitor  
FM Cap : Film Mica Capacitor  
MY Cap : Mylar Capacitor  
NP Cap : Non-polar Capacitor  
T Cap : Tantalum Capacitor  
TR Cap : Trimmer Capacitor  
MP Cap : Metalized Paper Capacitor



## 7.1 IS board assembly 01

01

## 7.2 SA board assembly 02

02

Symbol No.	Part No.	Part Name	Description
IC1	-	IC	CCD, NEC
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-332	MGR	3.3K 1/10W
R2	NRSA02J-101	MGR	100 1/10W
R3	NRSA02J-104	MGR	100K 1/10W
R4	NRSA02J-473	MGR	47K 1/10W
R5	NRSA02J-333	MGR	33K 1/10W
R6	NRSA02J-220	MGR	22 1/10W
R7	NRSA02J-332	MGR	3.3K 1/10W
R8	NRSA02J-104	MGR	100K 1/10W
R9	NRSA02J-103	MGR	10K 1/10W
R10	NRSA02J-472	MGR	4.7K 1/10W
C1	GER41EM-106	E CAP	10 25V
C2	GER41EM-106	E CAP	10 25V
C3	GER41CM-476	E CAP	47 16V
C4	GER81EM-475	T CAP	4.7 25V
C5	NCS21HJ-102	C CAP	1000P 50V
C6	NCF21EZ-104	C CAP	0.10 25V
C7	NCF21EZ-104	C CAP	10 25V
C8	NCF21EZ-104	C CAP	0.10 25V
C9	NCF21EZ-104	C CAP	0.10 25V
C10	NCF21EZ-104	C CAP	0.10 25V
	SCV1217-010	IC SOCKET	

Symbol No.	Part No.	Part Name	Description
IC1	MC-8088B	IC	MOTROLA
IC2	MC-8088B	IC	MOTROLA
IC3	MC-8088B	IC	MOTROLA
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q16	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q17	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q18	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R4	NRSA02J-332	MGR	3.3K 1/10W
R5	NRSA02J-332	MGR	3.3K 1/10W
R6	NRSA02J-332	MGR	3.3K 1/10W
R7	NRSA02J-681	MGR	680 1/10W
R8	NRSA02J-681	MGR	680 1/10W
R9	NRSA02J-681	MGR	680 1/10W
R10	NRSA02J-332	MGR	3.3K 1/10W
R11	NRSA02J-332	MGR	3.3K 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W
R13	NRSA02J-102	MGR	1.0K 1/10W
R14	NRSA02J-102	MGR	1.0K 1/10W
R15	NRSA02J-102	MGR	1.0K 1/10W
R16	NRSA02J-681	MGR	680 1/10W
R17	NRSA02J-152	MGR	1.5K 1/10W
R18	NRSA02J-102	MGR	1.0K 1/10W
R19	NRSA02J-102	MGR	1.0K 1/10W
R20	NRSA02J-102	MGR	1.0K 1/10W
R21	NRSA02J-102	MGR	1.0K 1/10W
R22	NRSA02J-222	MGR	2.2K 1/10W
R23	NRSA02J-222	MGR	2.2K 1/10W
R24	NRSA02J-222	MGR	2.2K 1/10W
R25	NRSA02J-272	MGR	2.7K 1/10W
R26	NRSA02J-272	MGR	2.7K 1/10W
R27	NRSA02J-272	MGR	2.7K 1/10W
R28	NRSA02J-102	MGR	1.0K 1/10W
R29	NRSA02J-102	MGR	1.0K 1/10W
R30	NRSA02J-102	MGR	1.0K 1/10W
R31	NRSA02J-102	MGR	1.0K 1/10W
R32	NRSA02J-102	MGR	1.0K 1/10W
R33	NRSA02J-102	MGR	1.0K 1/10W
R34	NRSA02J-102	MGR	1.0K 1/10W
R35	NRSA02J-102	MGR	1.0K 1/10W
R36	NRSA02J-102	MGR	1.0K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NCF21EZ-104	C CAP	0.10 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	GER40JM-476	E CAP	47 6.3V
C5	QAT3120-300	TR CAP	30P
C6	GER40JM-476	E CAP	47 6.3V
C7	GEJ41VM-105	T CAP	1.0 35V
C8	GEJ41VM-105	T CAP	1.0 35V
C9	GEJ41VM-105	T CAP	1.0 35V
C10	NCF21EZ-104	C CAP	0.10 25V
C11	NCF21EZ-104	C CAP	0.10 25V
C12	NCF21EZ-104	C CAP	0.10 25V
C13	NCF21EZ-104	C CAP	0.10 25V
C14	NCF21EZ-104	C CAP	0.10 25V
C15	NCF21EZ-104	C CAP	0.10 25V
C16	NCF21EZ-104	C CAP	0.10 25V
C17	NCF21EZ-104	C CAP	0.10 25V
C18	NCF21EZ-104	C CAP	0.10 25V
C19	GER41AM-476	E CAP	47 10V
C20	GER41AM-476	E CAP	47 10V
C21	GER40JM-476	E CAP	47 6.3V
C22	GEJ41AM-106	T CAP	10 10V
C23	NCT03CH-220	C CAP	22P 50V
C24	NCT03CH-100	C CAP	10P 50V
C25	NCT03CH-150	C CAP	15P 50V
C26	NCT03CH-9R0	C CAP	9.0P 50V
C27	NCT03CH-9R0	C CAP	9.0P 50V
C28	NCT03CH-9R0	C CAP	9.0P 50V
L1	SCV1488-120	PEAKING COIL	12uH
L2	SCV1488-120	PEAKING COIL	12uH
L3	SCV1488-120	PEAKING COIL	12uH



## 7.3 DR 1 board assembly 03

03

Symbol No.	Part No.	Part Name	Description
DL1	SCV1569-001	DELAY LINE	120 ns
DL2	SCV1570-001	DELAY LINE	160 ns
DL3	SCV1569-001	DELAY LINE	120 ns
CN10	SCV1228-004	CONNECTOR	4PIN
CN13	SCV1228-002	CONNECTOR	2PIN
CN14	SCV1228-002	CONNECTOR	2PIN
CN15	SCV1228-002	CONNECTOR	2PIN

Symbol No.	Part No.	Part Name	Description
IC1	UPD9317GB	IC	NEC
IC2	UPD9316GB	IC	NEC
IC3	TC74HC04AF	IC	TOSHIBA
IC4	TC50H000F	IC	TOSHIBA
IC5	UPD9318GB	IC	NEC
Q1	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q2	DTC124EK	TRANSISTOR	ROHM
D1	FC-52M	DIODE	FUJITSU
D2	MA152WK	DIODE	MATSUSHITA
R1	NRSA02J-472	MGR	4.7K 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-471	MGR	470 1/10W
R4	NRSA02J-471	MGR	470 1/10W
R5	NRSA02J-471	MGR	470 1/10W
R6	QVPB614-102	VR	1.0K SAMPE TIMING
R7	NRSA02J-100	MGR	10 1/10W
R8	NRSA02J-105	MGR	1.0M 1/10W
R9	NRSA02J-104	MGR	100K 1/10W
R10	NRSA02J-331	MGR	330 1/10W
R11	NRSA02J-682	MGR	6.8K 1/10W for NTSC
R12	NRSA02J-102	MGR	1K 1/10W for PAL
R13	NRSA02J-103	MGR	10K 1/10W NTSC only
R14	NRSA02J-103	MGR	10K 1/10W PAL only
R15	NRSA02J-103	MGR	10K 1/10W NTSC only
R16	NRSA02J-102	MGR	1.0K 1/10W
R17	NRSA02J-822	MGR	8.2K 1/10W
R18	NRSA02J-102	MGR	1.0K 1/10W
R19	NRSA02J-102	MGR	1.0K 1/10W
R20	NRSA02J-4R7	MGR	4.7 1/10W
R21			
R22	NRSA02J-100	MGR	10 1/10W
R23	NRSA02J-100	MGR	10 1/10W
R24	NRSA02J-471	MGR	470 1/10W
R25	NRSA02J-471	MGR	470 1/10W
R26	NRSA02J-561	MGR	560 1/10W
R27	NRSA02J-473	MGR	47K 1/10W
R28	NRSA02J-103	MGR	10K 1/10W
C1	QER41EM-106	E CAP	10 25V
C2	QETA1AM-227	E CAP	220 50V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	NCT03CH-220	C CAP	22P 50V
C6			
C7	NCT03CH-220	C CAP	22P 50V
C8	NCT03CH-220	C CAP	22P 50V
C9	NCT03CH-100	C CAP	10P 50V
C10	NCF21EZ-104	C CAP	0.10 25V
C11	NCT03CH-221	C CAP	220P 50V
C12	NCF21EZ-104	C CAP	0.10 25V
C13	NCF21EZ-104	C CAP	0.10 25V
C14	NCT03CH-880	C CAP	8P 50V
C15	NCT03CH-221	C CAP	220P 50V
C16	NCT03CH-221	C CAP	220P 50V
C17	QEZ41CM-225	T CAP	2.2 15V
C18	QEZ41AM-106	T CAP	10 10V
C19	NCF21EZ-104	C CAP	0.10 25V
C20	QCT25CH-150	C CAP	15P 50V
X1	SCV1316-002	CRYSTAL	
	SCV1315-010	CONNECTOR	10PIN



## 7.4 DR 2 board assembly 04

04

## 7.5 PP board assembly 05

05

Symbol No.	Part No.	Part Name	Description
IC1	UPD6147G	IC	NEC
IC2	UPD6147G	IC	NEC
IC3	UPD6147G	IC	NEC
IC4	TC4053BF	IC	TOSHIBA
Q1	2SD973(Q.R)	TRANSISTOR	MATSUSHITA
Q2	2SD973(Q.R)	TRANSISTOR	MATSUSHITA
Q3	2SD973(Q.R)	TRANSISTOR	MATSUSHITA
Q4	2SD973(Q.R)	TRANSISTOR	MATSUSHITA
Q5	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q6	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q7	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
D2	MA152A	DIODE	MATSUSHITA
D3	MA152WA	DIODE	MATSUSHITA
R1	NRSA02J-392	MGR	3.9K 1/10W
R2	NRSA02J-222	MGR	2.2K 1/10W
R3	NRSA02J-222	MGR	2.2K 1/10W
R4	NRSA02J-222	MGR	2.2K 1/10W
R5	NRSA02J-681	MGR	680 1/10W
R6	NRSA02J-223	MGR	22K 1/10W
R7	QVPB613-502	VR	5.0K VL
R8	QVPB613-103	VR	10K VH
R9	NRSA02J-222	MGR	2.2K 1/10W
R10	NRSA02J-153	MGR	15K 1/10W
R11	NRSA02J-222	MGR	2.2K 1/10W
R12	QVPC404-103	VR	10K R VSUB
R13	NRSA02J-472	MGR	4.7K 1/10W
R14	NRSA02J-104	MGR	100K 1/10W
R15	NRSA02J-222	MGR	2.2K 1/10W
R16	QVPC404-103	VR	10K B VSUB
R17	NRSA02J-472	MGR	4.7K 1/10W
R18	NRSA02J-104	MGR	100K 1/10W
R19	NRSA02J-222	MGR	2.2K 1/10W
R20	QVPC404-103	VR	10K G VSUB
R21	NRSA02J-472	MGR	4.7K 1/10W
R22	NRSA02J-104	MGR	100K 1/10W
R23	NRSA02J-472	MGR	4.7K 1/10W
R24	QVPB613-103	VR	10K VH(S)
R25	NRSA02J-153	MGR	15K 1/10W
R26	NRSA02J-181	MGR	180 1/10W
C1	QER40JM-107	E CAP	47 6.3V
C2	QER40JM-107	E CAP	100 6.3V
C3	QER41EM-106	E CAP	10 25V
C4	NCF21EZ-104	E CAP	0.10 25V
C5	QER41EM-106	E CAP	10 25V
C6	NCF21EZ-104	E CAP	0.10 25V
C7	QER40JM-476	E CAP	47 6.3V
C8	QER41EM-106	E CAP	10 25V
C9	QETA1AM-227	E CAP	220 10V
C10	QER41EM-106	E CAP	10 25V
C11	NCF21EZ-104	C CAP	0.10 25V
C12	NCF21EZ-104	C CAP	0.10 25V
C13	QER41EM-106	C CAP	10 25V
C14	QET141CM-106	C CAP	10 16V
C15	NCF21EZ-104	C CAP	0.10 25V
C16	QER41EM-106	E CAP	10 25V
C17	NCF21EZ-104	E CAP	0.10 25V
C18	QER41EM-106	E CAP	10 25V
C19	NCF21EZ-104	E CAP	0.10 25V
CN6	SCV1074-012	CONNECTOR	12PIN
CN7	SCV1074-012	CONNECTOR	12PIN
CN8	SCV1074-012	CONNECTOR	12PIN

Symbol No.	Part No.	Part Name	Description
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SK198(Q.R)	FET	MATSUSHITA
Q8	2SK198(Q.R)	FET	MATSUSHITA
Q9	2SK198(Q.R)	FET	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	2SK198(Q.R)	FET	MATSUSHITA
Q16	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q17	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q18	2SK198(Q.R)	FET	MATSUSHITA
Q19	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-333	MGR	33K 1/10W
R2	NRSA02J-393	MGR	39K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	QVPB613-203	VR	20K B H SAW
R7	NRSA02J-104	MGR	100K 1/10W
R8	QVPB613-203	VR	20K G H SAW
R9	NRSA02J-104	MGR	100K 1/10W
R10	QVPB613-203	VR	20K R H SAW
R11	NRSA02J-104	MGR	100K 1/10W
R12	NRSA02J-223	MGR	22K 1/10W
R13	NRSA02J-154	MGR	150K 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-222	MGR	2.2K 1/10W
R16	QVPB613-203	VR	20K B H PARA
R17	NRSA02J-153	MGR	15K 1/10W
R18	QVPB613-103	VR	10K G H PARA
R19	NRSA02J-153	MGR	15K 1/10W
R20	QVPB613-203	VR	20K R H PARA
R21	NRSA02J-153	MGR	15K 1/10W
R22	NRSA02J-103	MGR	10K 1/10W
R23	NRSA02J-393	MGR	39K 1/10W
R24	NRSA02J-153	MGR	15K 1/10W
R25	NRSA02J-222	MGR	2.2K 1/10W
R26	NRSA02J-222	MGR	2.2K 1/10W
R27	QVPB613-203	VR	20K B V SAW
R28	NRSA02J-104	MGR	100K 1/10W
R29	QVPB613-203	VR	20K G V SAW
R30	NRSA02J-104	MGR	100K 1/10W
R31	QVPB613-203	VR	20K R V SAW
R32	NRSA02J-104	MGR	100K 1/10W
R33	QVPB613-503	VR	50K G DY SAW
R34	NRSA02J-154	MGR	150K 1/10W
R35	QVPB613-503	VR	50K R DY SAW
R36	NRSA02J-154	MGR	150K 1/10W
R37	NRSA02J-223	MGR	22K 1/10W
R38	NRSA02J-154	MGR	150K 1/10W
R39	NRSA02J-222	MGR	2.2K 1/10W
R40	NRSA02J-222	MGR	2.2K 1/10W
R41	QVPB613-203	VR	20K B V PARA
R42	NRSA02J-223	MGR	22K 1/10W
R43	QVPB613-203	VR	20K G V PARA
R44	NRSA02J-223	MGR	22K 1/10W
R45	QVPB613-203	VR	20K R V PARA
R46	NRSA02J-223	MGR	22K 1/10W
R47	QVPB613-503	VR	50K G PARA DY
R48	NRSA02J-153	MGR	15K 1/10W
R49	QVPB613-503	VR	50K R PARA DY
R50	NRSA02J-153	MGR	15K 1/10W
R51	NRSA02J-222	MGR	2.2K 1/10W
R52	NRSA02J-222	MGR	2.2K 1/10W
R53	NRSA02J-153	MGR	15K 1/10W
R54	NRSA02J-153	MGR	15K 1/10W
R55	NRSA02J-153	MGR	15K 1/10W
R56	NRSA02J-152	MGR	1.5K 1/10W
R57	NRSA02J-152	MGR	1.5K 1/10W
R58	NRSA02J-152	MGR	1.5K 1/10W
R59	NRSA02J-104	MGR	100K 1/10W
R60	NRSA02J-104	MGR	100K 1/10W
R61	NRSA02J-473	MGR	47K 1/10W
R62	NRSA02J-103	MGR	10K 1/10W
R63	NRSA02J-473	MGR	47K 1/10W
R64	NRSA02J-103	MGR	10K 1/10W
R65	NRSA02J-473	MGR	47K 1/10W
R66	NRSA02J-103	MGR	10K 1/10W
R67	QVPB613-103	VR	10K B BLACK S1 L
R68	QVPB613-103	VR	10K G BLACK S1 L
R69	QVPB613-103	VR	10K R BLACK S1 L
R70	NRSA02J-101	MGR	100 1/10W



Symbol No.	Part No.	Part Name	Description
R77	NRSA02J-101	MGR	100 1/10W
R78	NRSA02J-101	MGR	100 1/10W
R79	NRSA02J-103	MGR	10K 1/10W
R80	QVPB613-103	VR	10K 8 PRESET BLACK
R81	NRSA02J-103	MGR	10K 1/10W
R82	QVPB613-103	VR	10K G PRESET BLACK
R83	NRSA02J-103	MGR	10K 1/10W
R84	QVPB613-103	VR	10K R PRESET BLACK
R85	NRSA02J-271	MGR	270 1/10W
R86	NRSA02J-331	MGR	330 1/10W
R87	NRSA02J-331	MGR	330 1/10W
R88	NRSA02J-682	MGR	5.8K 1/10W
R89	NRSA02J-682	MGR	5.8K 1/10W
R90	NRSA02J-682	MGR	6.8K 1/10W
R91	NRSA02J-333	MGR	33K 1/10W
R92	NRSA02J-474	MGR	470K 1/10W
R93	NRSA02J-683	MGR	68K 1/10W
R94	NRSA02J-102	MGR	1.0K 1/10W
R95	NRSA02J-472	MGR	4.7K 1/10W
R96	NRSA02J-152	MGR	1.5K 1/10W
R97	NRSA02J-221	MGR	220 1/10W
R98	NRSA02J-223	MGR	220K 1/10W
R99	NRSA02J-102	MGR	1.0K 1/10W
R100	NRSA02J-472	MGR	4.7K 1/10W
R101	NRSA02J-472	MGR	4.7K 1/10W
R102	NRSA02J-472	MGR	4.7K 1/10W
R103	QVPB613-104	VR	100K G DY H SAW
R104	NRSA02J-104	MGR	100K 1/10W
R105	QVPB613-104	VR	100K R DY H SAW
R106	NRSA02J-104	MGR	100K 1/10W
C1	NCT03CH-101	C CAP	100P 50V
C2	NCB21HK-222	C CAP	2200P 50V
C3	NCB21HK-222	C CAP	2200P 50V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	NCB21HK-222	C CAP	2200P 50V
C6	NCB21HK-222	C CAP	2200P 50V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	QEU41VM-105	T CAP	1.0 35V
C9	QER40JM-476	E CAP	47 6.3V
C10	QEU41VM-105	T CAP	1.0 35V
C11	QER40JM-476	E CAP	47 6.3V
C12	QEP40JM-476	NP CAP	47 6.3V
C13	NCT03CH-470	C CAP	47P 50V
C14	QEP40JM-476	NP CAP	47 6.3V
C15	NCT03CH-470	C CAP	47P 50V
C16	QEP40JM-476	NP CAP	47 6.3V
C17	NCT03CH-470	C CAP	47P 50V
C18	QER40JM-476	E CAP	47 6.3V
C19	QEU41AM-475	T CAP	4.7 10V
C20	QEU41AM-475	T CAP	4.7 10V
C21	QEU41AM-475	T CAP	4.7 10V
C22	QEU41AM-106	T CAP	10 10V
C23	QEU41AM-106	T CAP	10 10V
C24	QEU41AM-106	T CAP	10 10V
C25	QER41AM-476	E CAP	47 10V
C26	QER41AM-476	E CAP	47 10V
C27	QER41AM-476	E CAP	47 10V
C28	QER40JM-476	E CAP	47 6.3V
C29	QER40JM-476	E CAP	47 6.3V
C30	QER41AM-476	E CAP	47 10V
C31	NCT03CH-101	C CAP	100P 50V
C32	NCT03CH-151	C CAP	150P 50V
CN9	SCV1074-012	CONNECTOR	12PIN
CN11	SCV1319-155	CONNECTOR	15PIN

Symbol No.	Part No.	Part Name	Description
• CBM1	CBMC4222-00A	PRE BL MIX CBM	
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SK198(Q.R)	FET	MATSUSHITA
Q7	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SK198(Q.R)	FET	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-333	MGR	33K 1/10W
R2	NRSA02J-824	MGR	820K 1/10W
R3	NRSA02J-683	MGR	68K 1/10W
R4	NRSA02J-102	MGR	1.0K 1/10W
R5	NRSA02J-472	MGR	4.7K 1/10W
R6	NRSA02J-152	MGR	1.5K 1/10W
R7	NRSA02J-331	MGR	330 1/10W
R8	NRSA02J-223	MGR	220K 1/10W
R9	NRSA02J-102	MGR	1.0K 1/10W
R10	NRSA02J-333	MGR	33K 1/10W
R11	NRSA02J-824	MGR	820K 1/10W
R12	NRSA02J-683	MGR	68K 1/10W
R13	NRSA02J-102	MGR	1.0K 1/10W
R14	NRSA02J-472	MGR	4.7K 1/10W
R15	NRSA02J-152	MGR	1.5K 1/10W
R16	NRSA02J-221	MGR	220 1/10W
R17	NRSA02J-223	MGR	220K 1/10W
R18	NRSA02J-102	MGR	1.0K 1/10W
C1	NCT03CH-101	C CAP	100P 50V
C2	NCT03CH-101	C CAP	100P 50V
C3	NCT03CH-151	C CAP	150P 50V
C4	NCT03CH-151	C CAP	150P 50V
C19	NCF21EZ-104	C CAP	0.10 25V
	SCV1210-012	CONNECTOR (CLIP LEAD)	
• CBM2	CBMC4223-00A	SH MIX CBM	
IC1	NJM4558M	IC	JRC
IC2	NJM4558M	IC	JRC
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-333	MGR	33K 1/10W
R2	NRSA02J-824	MGR	820K 1/10W
R3	NRSA02J-683	MGR	68K 1/10W
R4	NRSA02J-102	MGR	1.0K 1/10W
R5	NRSA02J-472	MGR	4.7K 1/10W
R6	NRSA02J-333	MGR	33K 1/10W
R7	NRSA02J-824	MGR	820K 1/10W
R8	NRSA02J-683	MGR	68K 1/10W
R9	NRSA02J-102	MGR	1.0K 1/10W
R10	NRSA02J-472	MGR	4.7K 1/10W
R11	NRSA02J-472	MGR	4.7K 1/10W
R12	NRSA02J-472	MGR	4.7K 1/10W
R13	NRSA02J-221	MGR	220 1/10W
R14	NRSA02J-221	MGR	220 1/10W
R15	NRSA02J-221	MGR	220 1/10W
C1	NCT03CH-220	C CAP	2200P 50V
C2	NCT03CH-220	C CAP	2200P 50V
C3	NCT03CH-220	C CAP	2200P 50V
C4	NCT03CH-101	C CAP	100P 50V
C5	NCT03CH-101	C CAP	100P 50V
C6	NCT03CH-101	C CAP	100P 50V
	SCV1210-012	CONNECTOR (CLIP LEAD)	



## 7.6 PR 1 board assembly

06 06 00 00 00 00

Symbol No.	Part No.	Part Name	Description
IC1	INJM4560MD	IC	JRC
IC2	NJM4560MD	IC	JRC
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SK198(Q.R)	FET	MATSUSHITA
Q8	2SK198(Q.R)	FET	MATSUSHITA
Q9	2SK198(Q.R)	FET	MATSUSHITA
Q10	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q16	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q17	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q18	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q19	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q20	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q21	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q22	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q23	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q24	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q25	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q26	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q27	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q29	DTC124EK	TRANSISTOR	ROHM
Q30	DTC124EK	TRANSISTOR	ROHM
Q31	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q32	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q33	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
D2	1S2076A	DIODE	HITACHI
D3	1S2076A	DIODE	HITACHI
D4	1S2076A	DIODE	HITACHI
D5	1S2076A	DIODE	HITACHI
D6	1S2076A	DIODE	HITACHI
D7	1S2076A	DIODE	HITACHI
D8	1S2076A	DIODE	HITACHI
D9	1S2076A	DIODE	HITACHI
D10	1S2076A	DIODE	HITACHI
D11	1S2076A	DIODE	HITACHI
D12	1S2076A	DIODE	HITACHI
D13	1S2076A	DIODE	HITACHI
R1	QVPB614-103	VR	1.0K B IN GAIN
R2	QVPB614-103	VR	1.0K G IN GAIN
R3	QVPB614-103	VR	1.0K R IN GAIN
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-152	MGR	1.5K 1/10W
R6	NRSA02J-152	MGR	1.5K 1/10W
R7	NRSA02J-682	MGR	680 1/10W
R8	NRSA02J-102	MGR	1.0K 1/10W
R9	NRSA02J-682	MGR	680 1/10W
R10	NRSA02J-152	MGR	1.5K 1/10W
R11	NRSA02J-152	MGR	1.5K 1/10W
R12	NRSA02J-152	MGR	1.5K 1/10W
R13	NRSA02J-222	MGR	2.2K 1/10W
R14	NRSA02J-472	MGR	4.7K 1/10W
R15	NRSA02J-222	MGR	2.2K 1/10W
R16	QVPB614-103	VR	10K B BLACK
R17	QVPB614-103	VR	10K R BLACK
R18	NRSA02J-153	MGR	15K 1/10W
R19	NRSA02J-153	MGR	15K 1/10W
R20	NRSA02J-153	MGR	15K 1/10W
R21	NRSA02J-153	MGR	15K 1/10W
R22	NRSA02J-105	MGR	1.0M 1/10W
R23	NRSA02J-105	MGR	1.0M 1/10W
R24	NRSA02J-105	MGR	1.0M 1/10W
R25	NRSA02J-154	MGR	150K 1/10W
R26	NRSA02J-154	MGR	150K 1/10W
R27	NRSA02J-154	MGR	150K 1/10W
R28	NRSA02J-184	MGR	180K 1/10W
R29	NRSA02J-184	MGR	180K 1/10W
R30	NRSA02J-184	MGR	180K 1/10W
R31	NRSA02J-682	MGR	6.8K 1/10W
R32	NRSA02J-682	MGR	6.8K 1/10W
R33	NRSA02J-682	MGR	6.8K 1/10W
R34	NRSA02J-563	MGR	56K 1/10W
R35	NRSA02J-563	MGR	56K 1/10W
R36	NRSA02J-563	MGR	56K 1/10W
R37	NRSA02J-563	MGR	56K 1/10W
R38	NRSA02J-563	MGR	56K 1/10W
R39	NRSA02J-563	MGR	56K 1/10W
R40	NRSA02J-682	MGR	6.8K 1/10W

Symbol No.	Part No.	Part Name	Description
R41	NRSA02J-682	MGR	6.8K 1/10W
R42	NRSA02J-682	MGR	6.8K 1/10W
R43	NRSA02J-223	MGR	22K 1/10W
R44	NRSA02J-223	MGR	22K 1/10W
R45	NRSA02J-223	MGR	22K 1/10W
R46	QVPB613-103	VR	10K B FLARE
R47	QVPB613-103	VR	10K G FLARE
R48	QVPB613-103	VR	10K R FLARE
R49	NRSA02J-680	MGR	68 1/10W
R50	NRSA02J-680	MGR	68 1/10W
R51	NRSA02J-680	MGR	68 1/10W
R52	NRSA02J-221	MGR	220 1/10W
R53	NRSA02J-221	MGR	220 1/10W
R54	NRSA02J-221	MGR	220 1/10W
R55	NRSA02J-392	MGR	3.9K 1/10W
R56	QVPB614-502	VR	5.0K B KNEE
R57	NRSA02J-682	MGR	6.8K 1/10W
R58	QVPB614-502	VR	5.0K G KNEE
R59	QVPB614-502	VR	5.0K R KNEE
R60	QVPB613-103	VR	10K ABL
R61	NRSA02J-682	MGR	6.8K 1/10W
R62	NRSA02J-823	MGR	82K 1/10W
R63	NRSA02J-153	MGR	15K 1/10W
R64	NRSA02J-333	MGR	33K 1/10W
R65	NRSA02J-221	MGR	220 1/10W
R66	NRSA02J-221	MGR	220 1/10W
R67	NRSA02J-221	MGR	220 1/10W
R68	NRSA02J-153	MGR	15K 1/10W
R69	NRSA02J-153	MGR	15K 1/10W
R70	NRSA02J-153	MGR	15K 1/10W
R71	NRSA02J-562	MGR	5.6K 1/10W
R72	NRSA02J-562	MGR	5.6K 1/10W
R73	NRSA02J-562	MGR	5.6K 1/10W
R74	NRSA02J-181	MGR	180 1/10W
R75	NRSA02J-181	MGR	180 1/10W
R76	NRSA02J-181	MGR	180 1/10W
R77	NRSA02J-181	MGR	180 1/10W
R78	NRSA02J-181	MGR	180 1/10W
R79	NRSA02J-181	MGR	180 1/10W
R80	NRSA02J-123	MGR	12K 1/10W
R81	NRSA02J-123	MGR	12K 1/10W
R82	NRSA02J-123	MGR	12K 1/10W
R83	NRSA02J-562	MGR	5.6K 1/10W
R84	NRSA02J-562	MGR	5.6K 1/10W
R85	NRSA02J-562	MGR	5.6K 1/10W
R86	QVPB614-102	VR	1.0K B GAMMA
R87	QVPB614-102	VR	1.0K G GAMMA
R88	QVPB614-102	VR	1.0K R GAMMA
R89	NRSA02J-472	MGR	4.7K 1/10W
R90	NRSA02J-472	MGR	4.7K 1/10W
R91	NRSA02J-472	MGR	4.7K 1/10W
R92	NRSA02J-152	MGR	1.5K 1/10W
R93	NRSA02J-472	MGR	4.7K 1/10W
R94	NRSA02J-152	MGR	1.5K 1/10W
R95	NRSA02J-223	MGR	22K 1/10W
R96	NRSA02J-223	MGR	22K 1/10W
R97	GRV141F-1002	MFR	10.0K 1/4W
R98	GRV141F-1002	MFR	10.0K 1/4W
R99	NRSA02J-330	MGR	33 1/10W
R100	NRSA02J-221	MGR	220 1/10W
R101	NRSA02J-221	MGR	220 1/10W
R102	NRSA02J-221	MGR	220 1/10W
R103	NRSA02J-392	MGR	3.9K 1/10W
R104	NRSA02J-392	MGR	3.9K 1/10W
R105	NRSA02J-392	MGR	3.9K 1/10W
R106	NRSA02J-471	MGR	4.7K 1/10W
R107	NRSA02J-471	MGR	4.7K 1/10W
R109	NRSA02J-0R0	MGR	0 1/10W
R110	NRSA02J-0R0	MGR	0 1/10W
R111	NRSA02J-0R0	MGR	0 1/10W
C1	QEX41AK-226	E CAP	22 10V
C2	QEX41AM-475	T CAP	4.7 10V
C3	QEX41AM-475	T CAP	4.7 10V
C4	QEX41AM-475	T CAP	4.7 10V
C5	QEX41AM-475	T CAP	4.7 10V
C6	QEX41AM-475	T CAP	4.7 10V
C7	QEX41AM-475	T CAP	4.7 10V
C8	QEX41AM-475	T CAP	4.7 10V
C9	QEX41AM-475	T CAP	4.7 10V
C10	QEX41AM-475	T CAP	4.7 10V
C11	QEX41AM-475	T CAP	4.7 10V
C12	QEX41AM-475	T CAP	4.7 10V
C13	QEX41AM-475	T CAP	4.7 10V
C14	QEX41AM-475	T CAP	4.7 10V
C15	QEX41AM-475	T CAP	4.7 10V
C16	QEX41AM-475	T CAP	4.7 10V
C17	QEX41AM-475	T CAP	4.7 10V
C18	QEX41AM-475	T CAP	4.7 10V
C19	QEX41AM-475	T CAP	4.7 10V
C20	QEX41AM-475	T CAP	4.7 10V
C21	QEX41AM-475	T CAP	4.7 10V
C22	QEX41AM-475	T CAP	4.7 10V
C23	QEX41AM-475	T CAP	4.7 10V
C24	QEX41AM-475	T CAP	4.7 10V
C25	QEX41AM-475	T CAP	4.7 10V
C26	QEX41AM-475	T CAP	4.7 10V



Symbol No.	Part No.	Part Name	Description
C27	QER41VM-104	T CAP	0.10 35V
C28	QER41VM-104	T CAP	0.10 35V
C29	QER41VM-104	T CAP	0.10 35V
C30	NCF21EZ-104	C CAP	0.10 25V
C31	NCF21EZ-104	C CAP	0.10 25V
C32	NCF21EZ-104	C CAP	0.10 25V
C33	QER41AM-476	mmmm CAP	47 10V
C34	QEX41AK-226	mmmm CAP	22 10V
C35	QER41AM-476	mmmm CAP	47 10V
C36	QER41AM-476	mmmm CAP	47 10V
C37	QER40JM-476	E CAP	47 6.3V
C38	NCT03CH-9R0	C CAP	9.0P 50V
C39	NCT03CH-9R0	C CAP	9.0P 50V
C40	NCT03CH-9R0	C CAP	9.0P 50V
C41	QER40JM-476	E CAP	47 6.3V
C44	NCF21EZ-104	E CAP	0.10 25V
C45	QETA0JM-337	E CAP	330 6.3V
L1	SCV1488-120	PEAKING COIL	12 $\mu$
L2	SCV1488-120	PEAKING COIL	12 $\mu$
L3	SCV1488-120	PEAKING COIL	12 $\mu$
CN5	SCV0501-001	CONNECTOR	30PIN
• CBM1	CBMC4219-03A	B HI-SHNS CBM	
• CBM2	CBMC4219-02A	G HI-SENS CBM	
• CBM3	CMBC4219-01A	R HI-SENS CBM	
IC1	RC1496M	IC	
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R2	NRSA02J-221	MGR	220 1/10W
R3	NRSA02J-220	MGR	220 1/10W
R4	NRSA02J-150	MGR	150 1/10W
R5	NRSA02J-150	MGR	150 1/10W
R6	NRSA02J-182	MGR	182 1/10W
R7	NRSA02J-104	MGR	100K 1/10W
R8	NRSA02J-561	MGR	560 1/10W
R9	NRSA02J-104	MGR	100K 1/10W
R10	NRSA02J-101	MGR	100 1/10W
R11	NRSA02J-101	MGR	100 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W
R13	NRSA02J-221	MGR	220 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-562	MGR	5.6K 1/10W
R16	NRSA02J-333	MGR	33K 1/10W
R17	NRSA02J-563	MGR	56K 1/10 for "R"
	NRSA02J-683	MGR	68K 1/10 for "B"
			Unused for "G"
R18	NRSA02J-332	MGR	3.3K 1/10W
R19	NRSA02J-472	MGR	4.7K 1/10W
C1	NCT03CH-3R0	C CAP	3.0P 50V
	SCV1210-012	CONNECTOR (CLIP LEAD)	

Symbol No.	Part No.	Part Name	Description
• CBM4	CBMC4220-00A	GAMMA IN CBM	
• CBM5	CBMC4220-00A	GAMMA IN CBM	
• CBM6	CBMC4220-00A	GAMMA IN CBM	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SK198(Q.R)	FET	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-824	MGR	820K 1/10W
R2	NRSA02J-102	MGR	1.0K 1/10W
R3	NRSA02J-153	MGR	15K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-472	MGR	4.7K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-220	MGR	2.2K 1/10W
R8	NRSA02J-220	MGR	2.2K 1/10W
R9	NRSA02J-681	MGR	680 1/10W
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-682	MGR	6.8K 1/10W
R12	NRSA02J-153	MGR	15K 1/10W
R13	NRSA02J-152	MGR	1.5K 1/10W
R14	NRSA02J-682	MGR	6.8K 1/10W
C1	NCT03CH-8R0	C CAP	8.0P 50V
C2	NCT03CH-470	C CAP	47P 50V
	SCV1210-012	CONNECTOR (CLIP LEAD)	



## 7.7 PR 2 board assembly

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Symbol No.	Part No.	Part Name	Description
IC1	TC4053BF	IC	TOSHIBA
IC2	TC4053BF	IC	TOSHIBA
IC3	TC4053BF	IC	TOSHIBA
IC4	TC40H193F	IC	TOSHIBA
IC5	SCV0592-001	FUNCTION MODULE	JVC
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q10	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q38	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q39	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q40	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q41	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q42	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q43	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q44	2SK198(Q.R)	FET	MATSUSHITA
Q45	2SK198(Q.R)	FET	MATSUSHITA
Q46	2SK198(Q.R)	FET	MATSUSHITA
Q47	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q48	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q49	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q50	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q51	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q52	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q53	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q54	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q55	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q56	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q57	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q58	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q59	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q60	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q61	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q62	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q63	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q64	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q65	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q66	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q67	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q68	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q69	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q70	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q71	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q72	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q73	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q81	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q82	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q83	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q84	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q85	DTC124EK	TRANSISTOR	ROHM
D1	MA152A	DIODE	MATSUSHITA
D2	HZM6CTR	ZENER DIODE	HITACHI
D3	MA152WA	DIODE	MATSUSHITA
D4	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-471	MGR	470 1/10W
R2	NRSA02J-821	MGR	820 1/10W
R3	NRSA02J-471	MGR	470 1/10W
R4	NRSA02J-222	MGR	2.2K 1/10W
R5	NRSA02J-122	MGR	1.2K 1/10W
R6	NRSA02J-222	MGR	2.2K 1/10W
R7	QVPB614-102	VR	1.0K B GAIN
R8	QVPB614-102	VR	1.0K R GAIN
R9	QVPB614-102	VR	1.0K R GAIN
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-102	MGR	1.0K 1/10W
R12	NRSA02J-102	MGR	1.0K 1/10W
R13	NRSA02J-152	MGR	1.5K 1/10W
R14	NRSA02J-102	MGR	1.0K 1/10W
R15	NRSA02J-271	MGR	270 1/10W
R16	NRSA02J-392	MGR	3.9K 1/10W
R17	NRSA02J-273	MGR	27K 1/10W
R18	NRSA02J-511	MGR	510 1/10W
R19	NRSA02J-511	MGR	510 1/10W
R20	NRSA02J-511	MGR	510 1/10W
R21	NRSA02J-511	MGR	510 1/10W
R22	NRSA02J-511	MGR	510 1/10W
R23	NRSA02J-511	MGR	510 1/10W
R24	NRSA02J-682	MGR	68K 1/10W
R25	NRSA02J-682	MGR	68K 1/10W
R26	NRSA02J-682	MGR	68K 1/10W
R27	NRSA02J-122	MGR	1.2K 1/10W
R28	NRSA02J-122	MGR	1.2K 1/10W
R29	NRSA02J-122	MGR	1.2K 1/10W
R30	NRSA02J-122	MGR	1.2K 1/10W
R31	NRSA02J-122	MGR	1.2K 1/10W
R32	NRSA02J-122	MGR	1.2K 1/10W
R33	NRSA02J-122	MGR	1.2K 1/10W
R34	NRSA02J-122	MGR	1.2K 1/10W
R35	NRSA02J-122	MGR	1.2K 1/10W
R36	NRSA02J-122	MGR	1.2K 1/10W
R37	NRSA02J-122	MGR	1.2K 1/10W
R38	NRSA02J-122	MGR	1.2K 1/10W
R39	NRSA02J-122	MGR	1.2K 1/10W
R40	NRSA02J-122	MGR	1.2K 1/10W
R41	NRSA02J-122	MGR	1.2K 1/10W
R42	NRSA02J-122	MGR	1.2K 1/10W
R43	NRSA02J-122	MGR	1.2K 1/10W
R44	NRSA02J-122	MGR	1.2K 1/10W
R45	NRSA02J-122	MGR	1.2K 1/10W
R46	NRSA02J-122	MGR	1.2K 1/10W
R47	NRSA02J-122	MGR	1.2K 1/10W
R48	NRSA02J-122	MGR	1.2K 1/10W
R49	NRSA02J-122	MGR	1.2K 1/10W
R50	NRSA02J-122	MGR	1.2K 1/10W
R51	NRSA02J-122	MGR	1.2K 1/10W
R52	NRSA02J-122	MGR	1.2K 1/10W
R53	NRSA02J-122	MGR	1.2K 1/10W
R54	NRSA02J-122	MGR	1.2K 1/10W
R55	NRSA02J-122	MGR	1.2K 1/10W
R56	NRSA02J-122	MGR	1.2K 1/10W
R57	NRSA02J-122	MGR	1.2K 1/10W
R58	NRSA02J-122	MGR	1.2K 1/10W
R59	NRSA02J-122	MGR	1.2K 1/10W
R60	NRSA02J-152	MGR	1.5K 1/10W
R61	NRSA02J-152	MGR	1.5K 1/10W
R62	NRSA02J-152	MGR	1.5K 1/10W
R63	NRSA02J-272	MGR	27K 1/10W

Symbol No.	Part No.	Part Name	Description
R64	NRSA02J-272	MGR	2.7K 1/10W
R65	NRSA02J-272	MGR	2.7K 1/10W
R66	QVPB614-202	VR	2.0K B NEGA BLK
R67	QVPB614-202	VR	2.0K R NEGA BLK
R68	QVPB614-202	VR	2.0K R NEGA BLK
R69	NRSA02J-682	MGR	6.8K 1/10W
R70	NRSA02J-682	MGR	6.8K 1/10W
R71	NRSA02J-682	MGR	6.8K 1/10W
R72	NRSA02J-104	MGR	100K 1/10W
R73	NRSA02J-104	MGR	100K 1/10W
R74	NRSA02J-104	MGR	100K 1/10W
R75	NRSA02J-474	MGR	470K 1/10W
R76	NRSA02J-474	MGR	470K 1/10W
R77	NRSA02J-474	MGR	470K 1/10W
R78	NRSA02J-682	MGR	6.8K 1/10W
R79	NRSA02J-682	MGR	6.8K 1/10W
R80	NRSA02J-682	MGR	6.8K 1/10W
R81	NRSA02J-472	MGR	4.7K 1/10W
R82	NRSA02J-472	MGR	4.7K 1/10W
R83	NRSA02J-472	MGR	4.7K 1/10W
R84	NRSA02J-104	MGR	100K 1/10W
R85	NRSA02J-102	MGR	1.0K 1/10W
R86	NRSA02J-102	MGR	1.0K 1/10W
R87	NRSA02J-102	MGR	1.0K 1/10W
R88	NRSA02J-222	MGR	2.2K 1/10W
R89	QVPB613-202	VR	2.0K B+R
R90	NRSA02J-123	MGR	12K 1/10W
R91	QVPB613-202	VR	2.0K B-R
R92	NRSA02J-123	MGR	12K 1/10W
R93	NRSA02J-123	MGR	12K 1/10W
R94	QVPB613-202	VR	2.0K G-R
R95	NRSA02J-123	MGR	12K 1/10W
R96	QVPB613-202	VR	2.0K R-G
R97	QVPB613-202	VR	2.0K B-G
R98	NRSA02J-123	MGR	12K 1/10W
R99	QVPB613-202	VR	2.0K G-B
R100	NRSA02J-123	MGR	12K 1/10W
R101	NRSA02J-471	MGR	470 1/10W
R102	NRSA02J-471	MGR	470 1/10W
R103	NRSA02J-471	MGR	470 1/10W
R104	NRSA02J-471	MGR	470 1/10W
R105	NRSA02J-471	MGR	470 1/10W
R106	NRSA02J-471	MGR	470 1/10W
R107	NRSA02J-183	MGR	18K 1/10W
R108	NRSA02J-272	MGR	2.7K 1/10W
R109	NRSA02J-332	MGR	3.3K 1/10W
R110	NRSA02J-683	MGR	68K 1/10W
R111	NRSA02J-223	MGR	22K 1/10W
R112	NRSA02J-223	MGR	22K 1/10W
R113	NRSA02J-474	MGR	470K 1/10W
R114	NRSA02J-122	MGR	1.2K 1/10W
R115	NRSA02J-122	MGR	1.2K 1/10W
R116	NRSA02J-122	MGR	1.2K 1/10W
R117	NRSA02J-223	MGR	22K 1/10W
R118	NRSA02J-223	MGR	22K 1/10W
R119	NRSA02J-152	MGR	1.5K 1/10W
R120	NRSA02J-183	MGR	18K 1/10W
R121	QVPB614-502	VR	5.0K B W.CLIP
R122	QVPB614-502	VR	5.0K R W.CLIP
R123	QVPB614-502	VR	5.0K R W.CLIP
R124	NRSA02J-822	MGR	8.2K 1/10W
R125	NRSA02J-392	MGR	3.9K 1/10W
R126	NRSA02J-103	MGR	10K 1/10W
R127	NRSA02J-562	MGR	5.6K 1/10W
R128	NRSA02J-123	MGR	12K 1/10W
R129	NRSA02J-183	MGR	18K 1/10W
R130	NRSA02J-102	MGR	1.0K 1/10W
R131	NRSA02J-153	MGR	15K 1/10W
R132	NRSA02J-183	MGR	18K 1/10W
R133	NRSA02J-272	MGR	2.7K 1/10W
R134	NRSA02J-152	MGR	1.5K 1/10W
R135	NRSA02J-272	MGR	2.7K 1/10W
R136	NRSA02J-272	MGR	2.7K 1/10W
R137	NRSA02J-272	MGR	2.7K 1/10W
R138	NRSA02J-103	MGR	10K 1/10W
R139	NRSA02J-104	MGR	100K 1/10W
R140	NRSA02J-392	MGR	3.9K 1/10W
R141	NRSA02J-151	MGR	150 1/10W
R142	NRSA02J-151	MGR	150 1/10W
R143	NRSA02J-151	MGR	150 1/10W
R144	NRSA02J-123	MGR	12K 1/10W
R145	NRSA02J-474	MGR	470K 1/10W
R146	NRSA02J-563	MGR	56K 1/10W
R147	NRSA02J-100	MGR	10 1/10W
R148	NRSA02J-100	MGR	10 1/10W
R149	NRSA02J-683	MGR	68K 1/10W
R150	NRSA02J-362	MGR	36K 1/10W
R151	NRSA02J-362	MGR	36K 1/10W
R152	NRSA02J-223	MGR	22K 1/10W
R153	NRSA02J-123	MGR	12K 1/10W
R154	NRSA02J-683	MGR	68K 1/10W
R155	NRSA02J-362	MGR	36K 1/10W
R156	NRSA02J-362	MGR	36K 1/10W
R157	NRSA02J-223	MGR	22K 1/10W
R158	NRSA02J-123	MGR	12K 1/10W



Symbol No.	Part No.	Part Name	Description
R159	NRSA02J-471	MGR	470 1/10W
R160	NRSA02J-681	MGR	680 1/10W
R161	QVPB614-102	VR	1.0K TEST OUT GAIN
R162	NRSA02J-222	MGR	2.2K 1/10W
R163	NRSA02J-821	MGR	820 1/10W
R164	NRSA02J-123	MGR	12K 1/10W
R165	NRSA02J-472	MGR	4.7K 1/10W
R166	NRSA02J-472	MGR	4.7K 1/10W
R167	NRSA02J-392	MGR	3.9K 1/10W
R168	NRSA02J-102	MGR	1.0K 1/10W
R169	NRSA02J-560	MGR	56 1/10W
R170	NRSA02J-103	MGR	10K 1/10W
R171	NRSA02J-680	MGR	68 1/10W
R172	NRSA02J-560	MGR	56 1/10W
R173	NRSA02J-682	MGR	6.8K 1/10W
C1	QER41AM-476	MC CAP	47 10V
C2	NCF21EZ-104	MC CAP	0.1 25V
C3	QER40JM-476	MC CAP	47 6.3V
C4	NCT03CH-101	MC CAP	100P 50V
C5	QER40JM-476	MC CAP	47 6.3V
C6	QEP41CM-106	NP CAP	10 16V
C7	QEP41CM-106	NP CAP	10 16V
C8	QEP41CM-106	NP CAP	10 16V
C9	QER41AM-476	MC CAP	47 10V
C10	QER41AM-476	MC CAP	47 10V
C11	QER41AM-476	MC CAP	47 10V
C12	QER41EM-106	MC CAP	10 25V
C13	QER41EM-106	MC CAP	10 25V
C14	QER41EM-106	MC CAP	10 25V
C15	QEP41CM-106	NP CAP	10 16V
C16	QEP41CM-106	NP CAP	10 16V
C17	QEP41CM-106	NP CAP	10 16V
C18	QEP40JM-476	NP CAP	47 6.3V
C19	QEP40JM-476	NP CAP	47 6.3V
C20	QEP40JM-476	NP CAP	47 6.3V
C21	NCT03CH-180	MC CAP	18P 50V
C22	QER40JM-107	MC CAP	100 6.3V
C23	QER41HM-103	MC CAP	10 50V
C24	QER41AM-476	MC CAP	47 10V
C25	QER40JM-476	MC CAP	47 6.3V
C26	NCT03CH-150	MC CAP	15P 50V
C27	QER40JM-476	MC CAP	47 6.3V
C28	QAT3120-200	TR CAP	30P B DELAY
C29	QER41EM-106	MC CAP	10 25V
C30	QER40JM-476	MC CAP	47 6.3V
C31	QER40JM-476	MC CAP	47 6.3V
C32	QER40JM-476	MC CAP	47 6.3V
C33	QER40JM-476	MC CAP	47 6.3V
C34	NCT03CH-560	MC CAP	56P 50V
C35	NCT03CH-470	MC CAP	47P 50V
C36	NCT03CH-680	MC CAP	68P 50V
C37	QER40JM-476	MC CAP	47 6.3V
C38	QER40JM-107	MC CAP	100 6.3V
C39	NCF21EZ-104	MC CAP	0.1 25V
C40	NCF21EZ-104	MC CAP	0.1 25V
DL1	SCV1684-001	DELAY LINE	
DL2	SCV1684-001	DELAY LINE	
SW1	SCV1682-001	DIP SWITCH	B DELAY
SW2	SCV1682-001	DIP SWITCH	R DELAY
S3	SCV1080-003	SOCKET	MATRIX ON/OFF
S4	SCV1080-002	SOCKET	
CN4	SCV0501-001	CONNECTOR	30PIN

Symbol No.	Part No.	Part Name	Description
•CBM1	CBMC4218-00A	W & B CLIP CBM	
•CBM2	CBMC4218-00A	W & B CLIP CBM	
•CBM3	CBMC4218-00A	W & B CLIP CBM	
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-333	MGR	33K 1/10W
R2	NRSA02J-471	MGR	470 1/10W
R3	NRSA02J-333	MGR	33.3K 1/10W
R4	NRSA02J-333	MGR	33.3K 1/10W
R5	NRSA02J-103	MGR	10K 1/10W
R6	NRSA02J-562	MGR	5.6K 1/10W
R7	NRSA02J-562	MGR	5.6K 1/10W
R8	NRSA02J-472	MGR	4.7K 1/10W
R9	NRSA02J-103	MGR	10K 1/10W
R10	NRSA02J-332	MGR	3.3K 1/10W
R11	NRSA02J-332	MGR	3.3K 1/10W
R12	NRSA02J-152	MGR	1.5K 1/10W
R13	NRSA02J-182	MGR	1.8K 1/10W
R14	NRSA02J-223	MGR	22K 1/10W
	SCV1210-012	CONNECTOR (CLIP LEAD)	
•CBM4	CBMC4217-00A	PIX IN CBM	
IC1	TC4051BF	IC	TOSHIBA
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-681	MGR	680 1/10W
R2	NRSA02J-103	MGR	10.3K 1/10W
R3	NRSA02J-333	MGR	33.3K 1/10W
R4	NRSA02J-333	MGR	33.3K 1/10W
R5	NRSA02J-562	MGR	5.6K 1/10W
R6	NRSA02J-562	MGR	5.6K 1/10W
R7	NRSA02J-182	MGR	1.8K 1/10W
R8	NRSA02J-182	MGR	1.8K 1/10W
R9	NRSA02J-182	MGR	1.8K 1/10W
R10	NRSA02J-182	MGR	1.8K 1/10W
R11	NRSA02J-821	MGR	820 1/10W
R12	NRSA02J-822	MGR	8.2K 1/10W
R13	NRSA02J-222	MGR	2.2K 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-222	MGR	2.2K 1/10W
R16	NRSA02J-222	MGR	2.2K 1/10W
R17	NRSA02J-104	MGR	10.4K 1/10W
R18	NRSA02J-393	MGR	3.9K 1/10W
R19	NRSA02J-393	MGR	3.9K 1/10W
R20	NRSA02J-393	MGR	3.9K 1/10W
R21	NRSA02J-104	MGR	10.4K 1/10W
R22	NRSA02J-104	MGR	10.4K 1/10W
R23	NRSA02J-104	MGR	10.4K 1/10W
R24	NRSA02J-221	MGR	220 1/10W
	SCV1320-012	CONNECTOR (CLIP LEAD)	



## 7.8 CC 1 board assembly

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Symbol No.	Part No.	Part Name	Description
IC1	UA733CNS	IC	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SK198(Q.R)	FET	MATSUSHITA
Q12	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q14	DTC124EK	TRANSISTOR	ROHM
Q15	2SK198(Q.R)	FET	MATSUSHITA
Q16	DTC124EK	TRANSISTOR	ROHM
Q17			
Q19	2SK198(Q.R)	FET	MATSUSHITA
Q21	2SK198(Q.R)	FET	MATSUSHITA
Q22	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q23	2SK198(Q.R)	FET	MATSUSHITA
Q24	2SK198(Q.R)	FET	MATSUSHITA
Q25	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q26	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q27	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q30	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q31	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q32	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q33	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q34	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q35	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	HSM276S	DIODE	HITACHI
D2	HSM276S	DIODE	HITACHI
R1	NRSA02J-561	MGR	560 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-122	MGR	1.2K 1/10W
R4	NRSA02J-471	MGR	470 1/10W
R5	NRSA02J-471	MGR	470 1/10W
R6	NRSA02J-682	MGR	6.8K 1/10W
R7	NRSA02J-472	MGR	4.7K 1/10W
R8	NRSA02J-682	MGR	6.8K 1/10W
R9	QVPB613-202	VR	2.0K NOISE SLICE
R10	NRSA02J-472	MGR	4.7K 1/10W
R11	NRSA02J-152	MGR	1.5K 1/10W
R12	NRSA02J-221	MGR	220 1/10W
R13	NRSA02J-102	MGR	1.0K 1/10W
R14	NRSA02J-132	MGR	1.3K 1/10W
R15	NRSA02J-472	MGR	4.7K 1/10W
R16	NRSA02J-101	MGR	100 1/10W
R17	NRSA02J-152	MGR	1.5K 1/10W
R18	NRSA02J-561	MGR	560 1/10W
R19	NRSA02J-472	MGR	4.7K 1/10W
R20	NRSA02J-561	MGR	560 1/10W
R21	NRSA02J-472	MGR	4.7K 1/10W
R22	NRSA02J-102	MGR	1.0K 1/10W
R23	NRSA02J-152	MGR	1.5K 1/10W
R24	NRSA02J-272	MGR	2.7K 1/10W
R25	NRSA02J-472	MGR	4.7K 1/10W
R26	NRSA02J-682	MGR	6.8K 1/10W
R27	QVPB613-202	VR	2.0K V BAL
R28	NRSA02J-222	MGR	2.2K 1/10W
R29	NRSA02J-222	MGR	2.2K 1/10W
R30	NRSA02J-562	MGR	5.6K 1/10W
R31	NRSA02J-122	MGR	1.2K 1/10W
R32	NRSA02J-222	MGR	2.2K 1/10W
R33	QVPB613-202	VR	2.0K V LEVEL
R34	NRSA02J-332	MGR	3.3K 1/10W
R35	NRSA02J-472	MGR	4.7K 1/10W
R36	NRSA02J-333	MGR	33K 1/10W
R37	NRSA02J-103	MGR	10K 1/10W
R38	NRSA02J-332	MGR	3.3K 1/10W
R39	NRSA02J-272	MGR	2.7K 1/10W
R40	NRSA02J-821	MGR	820 1/10W
R41	NRSA02J-272	MGR	2.7K 1/10W
R42	NRSA02J-822	MGR	8.2K 1/10W
R43	QVPB613-502	VR	5.0K LEVEL DEPENDENT
R44	NRSA02J-103	MGR	10K 1/10W
R45	NRSA02J-103	MGR	10K 1/10W
R47	NRSA02J-104	MGR	100K 1/10W
R48	NRSA02J-223	MGR	22K 1/10W
R49	NRSA02J-104	MGR	100K 1/10W
R50	NRSA02J-223	MGR	22K 1/10W
R51	NRSA02J-223	MGR	22K 1/10W
R52	NRSA02J-105	MGR	1.0M 1/10W
R53	NRSA02J-101	MGR	100 1/10W

Symbol No.	Part No.	Part Name	Description
R54	NRSA02J-681	MGR	680 1/10W
R55	NRSA02J-222	MGR	2.2K 1/10W
R57	NRSA02J-222	MGR	2.2K 1/10W
R58	NRSA02J-103	MGR	10K 1/10W
R59	NRSA02J-103	MGR	10K 1/10W
R60	NRSA02J-472	MGR	4.7K 1/10W
R61	NRSA02J-103	MGR	10K 1/10W
R62	NRSA02J-103	MGR	10K 1/10W
R63	NRSA02J-103	MGR	10K 1/10W
R64	NRSA02J-681	MGR	680 1/10W
R65	NRSA02J-222	MGR	2.2K 1/10W
R66	NRSA02J-223	MGR	2.2K 1/10W
R67	NRSA02J-222	MGR	2.2K 1/10W
R68	QVPB613-202	VR	2.0K H LEVEL
R69	NRSA02J-223	MGR	22K 1/10W
R70	NRSA02J-222	MGR	2.2K 1/10W
R71	NRSA02J-102	MGR	1.0K 1/10W
R72	NRSA02J-102	MGR	1.0K 1/10W
R73	NRSA02J-561	MGR	560 1/10W
R74	NRSA02J-561	MGR	560 1/10W
R75	NRSA02J-222	MGR	2.2K 1/10W
R76	NRSA02J-221	MGR	220 1/10W
R77	NRSA02J-222	MGR	2.2K 1/10W
R78	NRSA02J-221	MGR	220 1/10W
R79	NRSA02J-222	MGR	22K 1/10W
R80	NRSA02J-223	MGR	22K 1/10W
R81	NRSA02J-682	MGR	6.8K 1/10W
R82	NRSA02J-391	MGR	390 1/10W
R83	NRSA02J-472	MGR	4.7K 1/10W
R84	NRSA02J-223	MGR	22K 1/10W
R85	NRSA02J-472	MGR	4.7K 1/10W
R86	NRSA02J-681	MGR	680 1/10W
R87	NRSA02J-223	MGR	22K 1/10W
R88	NRSA02J-102	MGR	1.0K 1/10W
R89	NRSA02J-471	MGR	470 1/10W
R90	NRSA02J-222	MGR	2.2K 1/10W
R91	NRSA02J-103	MGR	10K 1/10W
R92	NRSA02J-152	MGR	1.5K 1/10W
R93	NRSA02J-152	MGR	1.5K 1/10W
C1	GER41AM-476	E CAP	47 10V
C2	GER41EM-106	E CAP	10 25V
C3	GER41EM-106	E CAP	10 25V
C4	GER41EM-106	E CAP	10 25V
C5	NCT03CH-220	C CAP	22P 50V
C6	GER40JM-476	E CAP	47 6.3V
C7	GER41CM-476	E CAP	47 16V
C8	GER41AM-106	E CAP	10 10V
C9	NCT03CH-101	C CAP	100P 50V
C10	NCT03CH-100	C CAP	10P 50V
C11	GER41AM-476	E CAP	47 10V
C12	GER41VM-105	E CAP	1.0 35V
C13	NCT03CH-390	C CAP	39P 50V
C14	NCF21EZ-104	C CAP	0.10 25V
C15	GER41EM-106	E CAP	10 25V
C16	NCT03CH-220	C CAP	22P 50V
C17	GER40JM-476	E CAP	47 6.3V
C18	GER41EM-106	E CAP	10 25V
C19	NCF21EZ-104	C CAP	0.10 25V
C20	GER40JM-476	E CAP	47 6.3V
C21	GER40JM-476	E CAP	47 6.3V
C22	GER41EM-106	E CAP	10 25V
C23	GER41VM-105	E CAP	1.0 35V
C24	GER40JM-476	E CAP	47 6.3V
C25	GER41AM-476	E CAP	47 10V
C26			
C27			
C28	QEP40JM-476	NP CAP	47 6.3V
C29	QEP40JM-476	NP CAP	47 6.3V
C30	NCT03CH-100	C CAP	10P 50V
C31	NCT03CH-100	C CAP	10P 50V
C32	NCF21EZ-104	C CAP	0.10 25V
C33	QEP40JM-476	NP CAP	47 6.3V
C34	QEP40JM-476	NP CAP	47 6.3V
C35	NCT03CH-100	C CAP	10P 50V
C36	NCT03CH-100	C CAP	10P 50V
C37	GER41AM-476	E CAP	47 10V
C38	GER41AM-476	E CAP	47 10V
C39	GER41VM-105	T CAP	1.0 35V
C40	GER41VM-105	T CAP	1.0 35V
C41	GER41VM-105	T CAP	1.0 35V
C42	GER41CM-223	T CAP	2.2 25V
C43	QEP41EM-475	NP CAP	47 25V
C44			
C45	QEP41EM-475	NP CAP	47 25V
C46	NCT03CH-270	C CAP	27P 50V
L1	SCV0331-100	PEAKING COIL	10μ
L2	SCV0331-120	PEAKING COIL	12μ
L3	SCV0331-390	PEAKING COIL	39μ
L4	SCV0331-152	PEAKING COIL	152μ
L5	SCV0331-121	PEAKING COIL	120μ
DL1	SCV0573-001	DELAY LINE	140 nsec
DL2	SCV0572-001	DELAY LINE	120 nsec



Symbol No.	Part No.	Part Name	Description
CN20 CN32	SCV1227-013 SCV1227-002	CONNECTOR CONNECTOR	13PIN 2PIN
	SCV1315-004 SCV1315-008	CONNECTOR CONNECTOR	4PIN (TO CC2 board) 8PIN (TO CC2 board)
• CBM1	CBMC4224-00A	AGC AMP CBM	
• CBM2	CBMC4224-00A	AGC AMP CBM	
IC1	UA733CNS	IC	
Q1	ZSK198(Q.R)	FET	MATSUSHITA
R1 R2 R3 R4 R5	NRSA02J-470 NRSA02J-470 NRSA02J-224 NRSA02J-104 NRSA02J-680	MGR MGR MGR MGR MGR	47 1/10W 47 1/10W 220K 1/10W 100K 1/10W 68 1/10W
R6 R7 R8 R9	NRSA02J-101 NRSA02J-104 NRSA02J-472 NRSA02J-472	MGR MGR MGR MGR	100 1/10W 100K 1/10W 4.7K 1/10W 4.7K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
	SCV1210-006	CONNECTOR	
• CBM3	CBMC4221-00A	AGC DET CBM	
IC1	NJM062M	IC	JRC
Q1 Q2 Q3 Q4 Q5	ZSK198(Q.R) ZSK198(Q.R) ZSK198(Q.R) ZSK198(Q.R) ZSK198(Q.R)	FET FET FET FET FET	MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA
Q6	ZSK198(Q.R)	FET	MATSUSHITA
R1 R2 R3 R4 R5	NRSA02J-103 NRSA02J-563 NRSA02J-563 NRSA02J-563 NRSA02J-103	MGR MGR MGR MGR MGR	10K 1/10W 56K 1/10W 56K 1/10W 56K 1/10W 10K 1/10W
R6 R7 R8	NRSA02J-333 NRSA02J-333 NRSA02J-333	MGR MGR MGR	33K 1/10W 33K 1/10W 33K 1/10W
	SCV1210-012	CONNECTOR (CLIP LEAD)	

Symbol No.	Part No.	Part Name	Description
• CBM4	CBMC4225-00A	H CONTOUR CBM	
Q1 Q2 Q3 Q4	2SC2295(B.C) 2SC2295(B.C) 2SC2295(B.C) 2SA1022(B.C)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
R1 R2 R3 R4 R5	NRSA02J-272 NRSA02J-182 NRSA02J-272 NRSA02J-272 NRSA02J-681	MGR MGR MGR MGR MGR	2.7K 1/10W 1.8K 1/10W 2.7K 1/10W 2.7K 1/10W 680 1/10W
R6 R7 R8 R9 R10	NRSA02J-681 NRSA02J-271 NRSA02J-103 NRSA02J-681 NRSA02J-561	MGR MGR MGR MGR MGR	680 1/10W 270 1/10W 10K 1/10W 680 1/10W 560 1/10W
R11 R12 R13 R14	NRSA02J-821 NRSA02J-103 NRSA02J-223 NRSA02J-821	MGR MGR MGR MGR	820 1/10W 10K 1/10W 22K 1/10W 820 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
	SCV1210-006	CONNECTOR	

Revised 31 Aug. 1989.



## 7.10 SE (NTSC) board assembly 10-N

## 7.9 CC2 board assembly 09

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Symbol No.	Part No.	Part Name	Description
IC1	RC1496M	IC	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q3	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q4	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q5	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q6	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q8	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q9	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q10	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-472	MGR	4.7K 1/10W
R2	NRSA02J-221	MGR	220 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-471	MGR	470 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	NRSA02J-471	MGR	470 1/10W
R7	NRSA02J-682	MGR	6.8K 1/10W
R8	NRSA02J-153	MGR	15K 1/10W
R9	NRSA02J-123	MGR	12K 1/10W
R10	NRSA02J-471	MGR	470 1/10W
R11	NRSA02J-223	MGR	22K 1/10W
R12	NRSA02J-102	MGR	1.0K 1/10W
R13	NRSA02J-4R7	MGR	4.7 1/10W
R14	NRSA02J-4R7	MGR	4.7 1/10W
R15	NRSA02J-100	MGR	10 1/10W
R16	NRSA02J-560	MGR	56 1/10W
R17	NRSA02J-123	MGR	12K 1/10W
R18	NRSA02J-153	MGR	15K 1/10W
R19	NRSA02J-682	MGR	6.8K 1/10W
R20	NRSA02J-153	MGR	15K 1/10W
R21	NRSA02J-102	MGR	1.0K 1/10W
R22	NRSA02J-4R7	MGR	4.7 1/10W
R23	NRSA02J-4R7	MGR	4.7 1/10W
R24	NRSA02J-100	MGR	10 1/10W
R25	NRSA02J-560	MGR	56 1/10W
R26	NRSA02J-102	MGR	1.0K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NCT03CH-330	C CAP	33P 50V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	QEJ41AM-106	T CAP	10 10V
C5	NCF21EZ-104	C CAP	0.10 25V
C6	NCF21EZ-104	C CAP	0.10 25V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	QEJ41CM-106	T CAP	10 16V
DL1	SCV1333-001	DELAY LINE	2H DELAY (for NTSC)
	SCV1334-001	DELAY LINE	2H DELAY (for PAL)
	SCV1314-004	CONNECTOR	4PIN
	SCV1314-008	CONNECTOR	8PIN

Symbol No.	Part No.	Part Name	Description
IC1	SCV0270-001	FUNCTION MODULE	JVC
IC2	AN614	IC	MATSUSHITA
IC3	AN614	IC	MATSUSHITA
IC4	SCV0322-002	FUNCTION MODULE	JVC
IC5	TC40H004F	IC	TOSHIBA
IC6	TC50H000F	IC	TOSHIBA
IC7	TC40H000F	IC	TOSHIBA
IC8	TC4053BF	IC	TOSHIBA
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	DTC124EK	TRANSISTOR	ROHM
Q16	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q17	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q18	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q19	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q20	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q21	2SK198(Q.R)	FET	MATSUSHITA
Q22	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q23	2SK198(Q.R)	FET	MATSUSHITA
Q24	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q25	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q26	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q27	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q29	2SK198(Q.R)	FET	MATSUSHITA
Q30	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q31	DTC124EK	TRANSISTOR	ROHM
Q32	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
D2	MA152A	DIODE	MATSUSHITA
D3	SVC321(A)	VARI CAP DIODE	SANYO
D4	MA153	DIODE	MATSUSHITA
D5	SVC321(A)	VARI CAP DIODE	SANYO
D6	MA152A	DIODE	MATSUSHITA
D7	H24ALL	ZENER DIODE	HITACHI
D8	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-222	MGR	2.2K 1/10W
R2	QVPB614-202	VR	2.0K R-Y OUT GAIN
R3	NRSA02J-222	MGR	2.2K 1/10W
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	NRSA02J-392	MGR	3.9K 1/10W
R7	QVPB614-202	VR	2.0K B-Y OUT GAIN
R8	NRSA02J-272	MGR	2.7K 1/10W
R9	NRSA02J-182	MGR	1.8K 1/10W
R10	NRSA02J-222	MGR	2.2K 1/10W
R11	NRSA02J-152	MGR	1.5K 1/10W
R12	NRSA02J-352	MGR	3.5K 1/10W
R13	NRSA02J-561	MGR	560 1/10W
R14	NRSA02J-274	MGR	270K 1/10W
R15	NRSA02J-473	MGR	47K 1/10W
R16	QVPB614-502	VR	5.0K SYNC LEVEL
R17	NRSA02J-472	MGR	4.7K 1/10W
R18	NRSA02J-681	MGR	680 1/10W
R19	QVPB614-501	VR	500 MASTER V LEVEL
R20	NRSA02J-681	MGR	680 1/10W
R21	NRSA02J-223	MGR	22K 1/10W
R22	NRSA02J-123	MGR	12K 1/10W
R23	NRSA02J-471	MGR	470 1/10W
R24	NRSA02J-101	MGR	100 1/10W
R25	NRSA02J-101	MGR	100 1/10W
R26	NRSA02J-472	MGR	4.7K 1/10W
R27	QVPB614-202	VR	2.0K Y1 LEVEL
R28	NRSA02J-681	MGR	680 1/10W
R29	NRSA02J-102	MGR	1.0K 1/10W
R30	NRSA02J-102	MGR	1.0K 1/10W
R31	NRSA02J-102	MGR	1.0K 1/10W
R32	NRSA02J-122	MGR	1.2K 1/10W
R33	NRSA02J-182	MGR	1.8K 1/10W
R34	NRSA02J-123	MGR	12K 1/10W
R35	NRSA02J-243	MGR	24K 1/10W
R36	QVPB613-202	VR	2.0K Y2 LEVEL
R37	NRSA02J-122	MGR	1.2K 1/10W
R38	NRSA02J-122	MGR	1.2K 1/10W
R39	NRSA02J-681	MGR	680 1/10W
R40	NRSA02J-392	MGR	3.9K 1/10W
R41	NRSA02J-393	MGR	39K 1/10W



Symbol No.	Part No.	Part Name	Description
R42	NRSA02J-123	MGR	12K 1/10W
R43	NRSA02J-822	MGR	8.2K 1/10W
R44	NRSA02J-822	MGR	8.2K 1/10W
R45	NRSA02J-104	MGR	100K 1/10W
R46	NRSA02J-332	MGR	3.3K 1/10W
R47	NRSA02J-681	MGR	680 1/10W
R48	NRSA02J-122	MGR	1.2K 1/10W
R49	NRSA02J-153	MGR	15K 1/10W
R50	NRSA02J-103	MGR	10K 1/10W
R51	NRSA02J-122	MGR	1.2K 1/10W
R52	NRSA02J-102	MGR	1.0K 1/10W
R53	NRSA02J-822	MGR	8.2K 1/10W
R54	NRSA02J-101	MGR	100 1/10W
R55	NRSA02J-2R2	MGR	2.2 1/10W
R56	NRSA02J-2R2	MGR	2.2 1/10W
R57	NRSA02J-560	MGR	56 1/10W
R58	NRSA02J-562	MGR	5.6K 1/10W
R59	NRSA02J-103	MGR	10K 1/10W
R60	NRSA02J-472	MGR	4.7K 1/10W
R61	NRSA02J-392	MGR	3.9K 1/10W
R62	NRSA02J-392	MGR	3.9K 1/10W
R63	NRSA02J-105	MGR	1.0M 1/10W
R64	NRSA02J-223	MGR	22K 1/10W
R65	NRSA02J-101	MGR	100 1/10W
R66	NRSA02J-472	MGR	4.7K 1/10W
R67	NRSA02J-472	MGR	4.7K 1/10W
R68	NRSA02J-183	MGR	1.8K 1/10W
R69	NRSA02J-472	MGR	4.7K 1/10W
R70	NRSA02J-151	MGR	150 1/10W
R73	QVPB613-103	VR	10K BURST PHASE
R74	NRSA02J-103	MGR	10K 1/10W
R75	NRSA02J-103	MGR	1.0K 1/10W
R76	NRSA02J-103	MGR	1.0M 1/10W
R77	NRSA02J-223	MGR	22K 1/10W
R78	NRSA02J-102	MGR	1.0K 1/10W
R79	NRSA02J-102	MGR	1.0K 1/10W
R80	QVPB614-501	VR	500 CHROMA
R81	NRSA02J-561	MGR	560 1/10W
R82	NRSA02J-223	MGR	22K 1/10W
R83	NRSA02J-103	MGR	10K 1/10W
R84	NRSA02J-101	MGR	100 1/10W
R85	QVPB613-202	VR	2.0K CHROMA OUT LEVEL
R86	NRSA02J-102	MGR	1.0K 1/10W
R87	NRSA02J-392	MGR	3.9K 1/10W
R88	QVPB614-102	VR	1.0K C. BAL
R89	QVPB614-102	VR	1.0K C. BAL
R90	NRSA02J-220	MGR	22 1/10W
R91	NRSA02J-220	MGR	22 1/10W
R92	NRSA02J-222	MGR	2.2K 1/10W
R93	NRSA02J-471	MGR	470 1/10W
R94	QVPB613-501	VR	500 QUAD
R95	NRSA02J-122	MGR	1.2K 1/10W
R96	NRSA02J-222	MGR	2.2K 1/10W
R97	NRSA02J-222	MGR	2.2K 1/10W
R98	NRSA02J-472	MGR	4.7K 1/10W
R99	NRSA02J-682	MGR	6.8K 1/10W
R100	NRSA02J-103	MGR	10K 1/10W
R101	NRSA02J-102	MGR	1.0K 1/10W
R102	NRSA02J-2R2	MGR	2.2 1/10W
R103	NRSA02J-104	MGR	100K 1/10W
R104	NRSA02J-104	MGR	100K 1/10W
R105	NRSA02J-822	MGR	8.2K 1/10W
R106	NRSA02J-472	MGR	4.7K 1/10W
R107	NRSA02J-102	MGR	1.0K 1/10W
R108	NRSA02J-102	MGR	1.0K 1/10W
R109	NRSA02J-102	MGR	1.0K 1/10W
R110	QVPB613-502	VR	5.0K BURST LEVEL
R111	NRSA02J-392	MGR	3.9K 1/10W
R112	NRSA02J-104	MGR	100K 1/10W
R113	NRSA02J-823	MGR	82K 1/10W
R114	NRSA02J-104	MGR	100K 1/10W
R115	NRSA02J-104	MGR	100K 1/10W
R116	NRSA02J-101	MGR	100 1/10W
R117	NRSA02J-104	MGR	100K 1/10W
R118	NRSA02J-823	MGR	82K 1/10W
R119	NRSA02J-822	MGR	8.2K 1/10W
R120	NRSA02J-223	MGR	22K 1/10W
R121	QVPB613-202	VR	2.0K R-Y GAIN
R122	NRSA02J-332	MGR	3.3K 1/10W
R123	NRSA02J-104	MGR	100K 1/10W
R124	NRSA02J-332	MGR	3.3K 1/10W
R125	NRSA02J-223	MGR	22K 1/10W
R126	NRSA02J-682	MGR	6.8K 1/10W
R127	NRSA02J-222	MGR	2.2K 1/10W
R128	QVPB613-202	VR	2.0K INT SC FINE
R129	NRSA02J-273	MGR	27K 1/10W
R130	NRSA02J-273	MGR	27K 1/10W
R131	NRSA02J-103	MGR	10K 1/10W
R132	NRSA02J-391	MGR	390 1/10W
R133	NRSA02J-750	MGR	75 1/10W

Symbol No.	Part No.	Part Name	Description
C1	QER41AM-476	E CAP	47 10V
C2	QER41AM-476	E CAP	47 10V
C3	QER41AM-476	E CAP	47 10V
C4	QER40JM-476	E CAP	47 6.3V
C5	QER41AM-476	E CAP	47 10V
C6	QER40JM-476	E CAP	47 6.3V
C7	NCT03CH-560	E CAP	56P 50V
C8	QER41AM-476	E CAP	47 10V
C9	QEP40JM-476	NP CAP	10 6.3V
C10	QER41EM-106	E CAP	10 25V
C11	QER41AM-476	E CAP	47 10V
C12	NCT03CH-272	E CAP	2700P 50V
C13	NCT03CH-561	E CAP	560P 50V
C14	QER41VM-684	E CAP	68 35V
C15	QER41AM-476	E CAP	47 10V
C16	QER41AM-476	E CAP	47 10V
C17	NCF21HZ-103	C CAP	0.010 50V
C18	NCF21HZ-103	C CAP	0.010 50V
C19	NCF21EZ-104	C CAP	0.010 50V
C20	QER41EM-106	E CAP	10 25V
C21	QER41AM-476	E CAP	47 10V
C22	NCF21EZ-104	C CAP	0.10 25V
C23	QER40JM-476	E CAP	47 6.3V
C24	QER41VM-684	E CAP	68 35V
C25	QER40JM-476	E CAP	47 6.3V
C26	QER40JM-476	E CAP	47 6.3V
C27	NCF21HZ-103	C CAP	0.010 50V
C28	NCF21HZ-103	C CAP	0.010 50V
C29	NCT03CH-560	E CAP	560P 50V
C30	NCT03CH-101	C CAP	100P 50V
C31	NCT03CH-101	C CAP	100P 50V
C32	NCT03CH-101	C CAP	100P 50V
C33	NCT03CH-151	C CAP	150P 50V
C34	QER41EM-106	E CAP	10 25V
C35	QER41EM-106	E CAP	10 25V
C36	NCT03CH-151	C CAP	150P 50V
C37	QER40JM-476	E CAP	47 6.3V
C38	QER41AM-106	T CAP	10 10V
C39	NCT03CH-220	C CAP	22P 50V
C40	NCF21EZ-104	C CAP	0.010 50V
C41	NCT03CH-151	C CAP	150P 50V
C42	QAT3120-200	TR CAP	SC FREQ
C43	QCT05UJ-100	C CAP	10P 50V
C44	NCF21HZ-103	C CAP	0.010 50V
C45	NCF21HZ-103	C CAP	0.010 50V
C46	QER41AM-106	T CAP	10 10V
C47	NCF21HZ-103	C CAP	0.010 50V
C48	NCT03CH-220	C CAP	22P 50V
C49	NCT03CH-101	C CAP	100P 50V
C50	QAT3120-200	TR CAP	SC FREQ
C51	NCT03CH-270	C CAP	27P 50V
C52	NCF21EZ-104	C CAP	0.10 25V
C53	NCF21EZ-104	C CAP	0.10 25V
C54	QER40JM-476	E CAP	47 6.3V
C55	QER41EM-106	E CAP	10 25V
C56	QER41AM-476	E CAP	47 10V
C57	QER40JM-476	E CAP	47 6.3V
C58	NCT03CH-820	C CAP	82P 50V
C59	QER41AM-476	E CAP	47 10V
C60	NCT03CH-3R0	C CAP	3.0P 50V
C61	QER41AM-106	T CAP	10 10V
C62	NCT03CH-221	C CAP	220P 50V
C63	NCT03CH-121	C CAP	120P 50V
C64	NCF21HZ-103	C CAP	0.010 50V
C65	QER41VM-105	T CAP	10 35V
C66	NCT03CH-470	C CAP	47P 50V
C67	NCT03CH-5R0	C CAP	5.0P 50V
C68	NCT03CH-5R0	C CAP	5.0P 50V
L1	SCV0331-4R7	PEAKING COIL	4.7uH
L2	SCV0331-100	PEAKING COIL	100uH
L3	SCV0331-220	PEAKING COIL	220uH
L4	SCV0331-220	PEAKING COIL	220uH
L5	SCV0331-820	PEAKING COIL	82uH
L6	SCV0983-500	COIL	50uH
L7	SCV1488-121	PEAKING COIL	120uH
DL1	SCV0639-001	DELAY LINE	0.3uH
X1	SCV0347-002	CRYSTAL	Sheet SC4111-001
X2	SCV0347-002	CRYSTAL	Sheet SC4111-001
CN3	SCV0501-001	CONNECTOR	3CPIN



Symbol No.	Part No.	Part Name	Description
S1	SCV0494-004 SCV1392-001	CONNECTOR SHORT PIN	}INT SC COARSE
T1	SCV0171-001	TRANSFORMER	
●CBM1 CBMC4229-N0A R-Y (N) CBM			
Q1 Q2 Q3	2SC2295(B.C) 2SA1022(B.C) 2SA1022(B.C)	TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA MATSUSHITA
R1 R2 R3 R4 R6	NRSA02J-102 NRSA02J-182 NRSA02J-152 NRSA02J-222 NRSA02J-182	MGR MGR MGR MGR MGR	1.0K 1/10W 1.8K 1/10W 1.5K 1/10W 2.2K 1/10W 1.8K 1/10W
R7 R8	NRSA02J-182 NRSA02J-562	MGR MGR	1.8K 1/10W 5.6K 1/10W
C1 C2	NCT03CH-121 NCT03CH-560	C CAP C CAP	120P 50V 56P 50V
	SCV1210-006	CONNECTOR	
●CBM2 CBMC4229-N1A B-Y (N) CBM			
Q1 Q2 Q3	2SC2295(B.C) 2SA1022(B.C) 2SA1022(B.C)	TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA MATSUSHITA
R1 R2 R3 R4 R5	NRSA02J-102 NRSA02J-182 NRSA02J-472 NRSA02J-332 NRSA02J-682	MGR MGR MGR MGR MGR	1.0K 1/10W 1.8K 1/10W 4.7K 1/10W 3.3K 1/10W 6.8K 1/10W
R6 R7 R8	NRSA02J-182 NRSA02J-152 NRSA02J-562	MGR MGR MGR	1.8K 1/10W 1.5K 1/10W 5.6K 1/10W
C1 C2	NCT03CH-121 NCT03CH-560	C CAP C CAP	120P 50V 56P 50V
	SCV1210-006	CONNECTOR	

Symbol No.	Part No.	Part Name	Description
●CBM3 CBMC4301-00A SC SHIFT CBM			
Q1 Q2 Q3	2SC2295(B.C) 2SC2295(B.C) 2SC2295(B.C)	TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA MATSUSHITA
R1 R2 R3 R4 R5	NRSA02J-682 NRSA02J-272 NRSA02J-103 NRSA02J-681 NRSA02J-681	MGR MGR MGR MGR MGR	6.8K 1/10W 27K 1/10W 10K 1/10W 680 1/10W 680 1/10W
R6 R7 R8 R9 R10	NRSA02J-561 NRSA02J-681 NRSA02J-681 NRSA02J-561 NRSA02J-273	MGR MGR MGR MGR MGR	560 1/10W 680 1/10W 680 1/10W 560 1/10W 27K 1/10W
R11 R12 R13	NRSA02J-103 NRSA02J-681 NRSA02J-471	MGR MGR MGR	10K 1/10W 680 1/10W 470 1/10W
C1 C2 C3 C4 C5	NCF21HZ-103 NCT03CH-220 NCF21HZ-103 NCT03CH-101 NCT03CH-101	C CAP C CAP C CAP C CAP C CAP	0.010 50V 22P 50V 0.010 50V 100P 50V 100P 50V
C6 C7	NCF21HZ-103 NCT03CH-560	C CAP C CAP	0.010 50V 56P 50V
	SCV1210-012	CONNECTOR (CLIP LEAD)	
●ZEBRA board			
IC1 IC2	NJM319M TC4053BF	IC IC	JRC TOSHIBA
Q1 Q2 Q3 Q4 Q5	2SC2295(B.C) 2SC2295(B.C) 2SC2295(B.C) 2SC2295(B.C) 2SC2295(B.C)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA
Q6	DTC124EK	TRANSISTOR	ROHM
R1 R2 R3 R4 R5	NRSA02J-273 NRSA02J-681 NRSA02J-103 NRSA02J-123 QVPC404-502	MGR MGR MGR MGR VR	27K 1/10W 680 1/10W 10K 1/10W 12K 1/10W 5.0K ZEBRA SET
R6 R7 R8 R9 R10	NRSA02J-104 NRSA02J-103 NRSA02J-183 NRSA02J-562 NRSA02J-183	MGR MGR MGR MGR MGR	100K 1/10W 10K 1/10W 18K 1/10W 5.6K 1/10W 18K 1/10W
R11 R12 R13 R14 R15	NRSA02J-562 NRSA02J-103 NRSA02J-183 NRSA02J-332 NRSA02J-682	MGR MGR MGR MGR MGR	5.6K 1/10W 10K 1/10W 18K 1/10W 3.3K 1/10W 6.8K 1/10W
R16 R17 R18 R19	NRSA02J-332 NRSA02J-472 NRSA02J-472 NRSA02J-223	MGR MGR MGR MGR	3.3K 1/10W 4.7K 1/10W 4.7K 1/10W 22K 1/10W
C1 C2 C3 C4	NCF21HZ-103 NCF21EZ-104 NCF21EZ-104 NCF21EZ-104	C CAP C CAP C CAP C CAP	0.010 50V 0.10 25V 0.10 25V 0.10 25V
	SCV0495-004	CONNECTOR	2PCS.4PIN



## 7.10 SE (PAL) board assembly 10-P 10

Symbol No.	Part No.	Part Name	Description	Symbol No.	Part No.	Part Name	Description
IC1	SCV0270-001	FUNCTION MODULE	JVC	R31	NRSA02J-102	MGR	1.0K 1/10W
IC2	AN614	IC	MATSUSHITA	R32	NRSA02J-182	MGR	1.8K 1/10W
IC3	AN614	IC	MATSUSHITA	R33	NRSA02J-153	MGR	1.5K 1/10W
IC4	TC4053BF	IC	TOSHIBA	R34	NRSA02J-243	MGR	2.4K 1/10W
IC5	TC4053BF	IC	TOSHIBA	R35	QVPB613-202	VR	2.0K Y2 LEVEL
IC6	SCV0322-002	FUNCTION MODULE	JVC	R36	NRSA02J-182	MGR	1.8K 1/10W
IC7	TC40H004F	IC	TOSHIBA	R37	NRSA02J-681	MGR	680 1/10W
IC8	TC50H000F	IC	TOSHIBA	R38	NRSA02J-392	MGR	3.9K 1/10W
IC9	TC40H000F	IC	TOSHIBA	R39	NRSA02J-393	MGR	3.9K 1/10W
IC10	TC4053BF	IC	TOSHIBA	R40	NRSA02J-123	MGR	1.2K 1/10W
IC11	AN614	IC	MATSUSHITA	R41	NRSA02J-822	MGR	8.2K 1/10W
IC12	AN614	IC	MATSUSHITA	R42	NRSA02J-622	MGR	620 1/10W
IC13	SN74LS93N	IC	TEXAS	R43	NRSA02J-104	MGR	100K 1/10W
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R44	NRSA02J-332	MGR	3.3K 1/10W
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R45	NRSA02J-332	MGR	3.3K 1/10W
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R46	NRSA02J-102	MGR	1.0K 1/10W
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R47	NRSA02J-332	MGR	3.3K 1/10W
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R48	NRSA02J-222	MGR	2.2K 1/10W
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R49	NRSA02J-122	MGR	1.2K 1/10W
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R50	NRSA02J-101	MGR	100 1/10W
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R51	NRSA02J-332	MGR	3.3K 1/10W
Q9	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R52	NRSA02J-102	MGR	1.0K 1/10W
Q10	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R53	NRSA02J-122	MGR	1.2K 1/10W
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R54	NRSA02J-122	MGR	1.2K 1/10W
Q12	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R55	NRSA02J-681	MGR	680 1/10W
Q13	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R56	NRSA02J-103	MGR	10K 1/10W
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R57	NRSA02J-103	MGR	10K 1/10W
Q15	DTC124EK	TRANSISTOR	ROHM	R58	QVPB613-202	VR	2.0K R-Y GAIN
Q16	2SC22406(S.T)	TRANSISTOR	MATSUSHITA	R59	NRSA02J-105	MGR	1.0K 1/10W
Q17	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R60	NRSA02J-223	MGR	2.2K 1/10W
Q18	DTC124EK	TRANSISTOR	ROHM	R61	NRSA02J-101	MGR	100 1/10W
Q19	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R62	NRSA02J-222	MGR	2.2K 1/10W
Q20	2SK198(Q.R)	FET	MATSUSHITA	R63	NRSA02J-222	MGR	2.2K 1/10W
Q21	2SD602(Q.R)	TRANSISTOR	MATSUSHITA	R64	NRSA02J-222	MGR	2.2K 1/10W
Q22	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R65	NRSA02J-560	MGR	560 1/10W
Q23	2SK198(Q.R)	FET	MATSUSHITA	R66	NRSA02J-562	MGR	5.6K 1/10W
Q24	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R67	NRSA02J-122	MGR	1.2K 1/10W
Q25	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R68	NRSA02J-472	MGR	4.7K 1/10W
Q26	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R69	QVPB613-103	VR	1.0K BURST PHASE
Q27	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R70	NRSA02J-123	MGR	1.2K 1/10W
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R71	NRSA02J-392	MGR	3.9K 1/10W
Q29	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R72	NRSA02J-105	MGR	1.0K 1/10W
Q30	2SK198(Q.R)	FET	MATSUSHITA	R73	NRSA02J-223	MGR	2.2K 1/10W
Q31	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R74	NRSA02J-102	MGR	1.0K 1/10W
Q32	DTC124EK	TRANSISTOR	ROHM	R75	NRSA02J-102	MGR	1.0K 1/10W
Q33	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R76	QVPB614-501	VR	500 CHROMA
Q34	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R77	NRSA02J-564	MGR	560 1/10W
Q35	2SB710(Q.R)	TRANSISTOR	MATSUSHITA	R78	NRSA02J-153	MGR	1.5K 1/10W
Q36	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	R79	NRSA02J-153	MGR	1.5K 1/10W
Q37	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R80	NRSA02J-101	MGR	100 1/10W
Q38	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	R81	QVPB613-202	VR	2.0K CHROMA OUT
D1	MA152A	DIODE	MATSUSHITA	R82	NRSA02J-102	MGR	1.0K 1/10W
D2	MA152A	DIODE	MATSUSHITA	R83	NRSA02J-392	MGR	3.9K 1/10W
D3	SVC321(A)	VARI CAP DIODE	SANYO	R84	NRSA02J-220	MGR	2.2K 1/10W
D4	MA153	DIODE	MATSUSHITA	R85	NRSA02J-220	MGR	2.2K 1/10W
D5	SVC321(A)	VARI CAP DIODE	SANYO	R86	NRSA02J-222	MGR	2.2K 1/10W
D6	MA152A	DIODE	MATSUSHITA	R87	QVPB614-102	VR	1.0K B-Y C-BAL
D8	HZ4ALL	ZENER DIODE	HITACHI	R88	QVPB614-102	VR	1.0K R-Y C-BAL
R1	QVPB613-202	VR	2.0K R-Y GAIN	R89	QVPB614-102	VR	1.0K R-Y C-BAL
R2	NRSA02J-222	MGR	2.2K 1/10W	R90	NRSA02J-681	MGR	680 1/10W
R3	NRSA02J-222	MGR	2.2K 1/10W	R91	NRSA02J-681	MGR	680 1/10W
R4	NRSA02J-152	MGR	1.5K 1/10W	R92	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W	R93	NRSA02J-223	MGR	2.2K 1/10W
R6	QVPB613-202	VR	2.0K B-Y GAIN	R94	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-332	MGR	3.3K 1/10W	R95	NRSA02J-822	MGR	8.2K 1/10W
R8	NRSA02J-272	MGR	2.7K 1/10W	R96	NRSA02J-471	MGR	4.7K 1/10W
R9	NRSA02J-182	MGR	1.8K 1/10W	R97	QVPB613-501	VR	500 QUAD
R10	NRSA02J-222	MGR	2.2K 1/10W	R98	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-153	MGR	1.5K 1/10W	R99	NRSA02J-102	MGR	1.0K 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W	R100	NRSA02J-223	MGR	2.2K 1/10W
R13	NRSA02J-561	MGR	560 1/10W	R101	NRSA02J-472	MGR	4.7K 1/10W
R14	NRSA02J-123	MGR	1.2K 1/10W	R102	NRSA02J-682	MGR	680 1/10W
R15	NRSA02J-472	MGR	4.7K 1/10W	R103	NRSA02J-103	MGR	10K 1/10W
R16	QVPB614-502	VR	5.0K SYNC LEVEL	R104	NRSA02J-104	MGR	100K 1/10W
R17	NRSA02J-681	MGR	680 1/10W	R105	NRSA02J-223	MGR	2.2K 1/10W
R18	QVPB614-501	VR	500 Y LEVEL	R106	NRSA02J-104	MGR	100K 1/10W
R19	NRSA02J-681	MGR	680 1/10W	R107	NRSA02J-104	MGR	100K 1/10W
R20	NRSA02J-223	MGR	2.2K 1/10W	R108	NRSA02J-103	MGR	10K 1/10W
R21	NRSA02J-123	MGR	1.2K 1/10W	R109	NRSA02J-103	MGR	10K 1/10W
R22	NRSA02J-471	MGR	4.7K 1/10W	R110	NRSA02J-472	MGR	4.7K 1/10W
R23	NRSA02J-101	MGR	100 1/10W	R111	NRSA02J-332	MGR	3.3K 1/10W
R24	NRSA02J-101	MGR	100 1/10W	R112	NRSA02J-102	MGR	1.0K 1/10W
R25	NRSA02J-151	MGR	150 1/10W	R113	NRSA02J-102	MGR	1.0K 1/10W
R26	QVPB613-202	VR	2.0K Y1 LEVEL	R114	NRSA02J-392	MGR	3.9K 1/10W
R27	NRSA02J-681	MGR	680 1/10W	R115	NRSA02J-103	MGR	10K 1/10W
R28	NRSA02J-102	MGR	1.0K 1/10W	R116	NRSA02J-104	MGR	100K 1/10W
R29	NRSA02J-102	MGR	1.0K 1/10W	R117	NRSA02J-104	MGR	100K 1/10W
R30	NRSA02J-102	MGR	1.0K 1/10W	R118	NRSA02J-104	MGR	100K 1/10W
				R119	NRSA02J-823	MGR	82K 1/10W
				R120	NRSA02J-682	MGR	6.8K 1/10W



Symbol No.	Part No.	Part Name	Description
R121	NRSA02J-222	MGR	2.2K 1/10W
R122	NRSA02J-104	MGR	100K 1/10W
R123	NRSA02J-823	MGR	82K 1/10W
R124	NRSA02J-823	MGR	82K 1/10W
R125	NRSA02J-103	MGR	10K 1/10W
R126	NRSA02J-182	MGR	1.8K 1/10W
R127	NRSA02J-333	MGR	3.3K 1/10W
R128	NRSA02J-102	MGR	1.0K 1/10W
R129	NRSA02J-272	MGR	2.7K 1/10W
R130	NRSA02J-103	MGR	10K 1/10W
R131	NRSA02J-562	MGR	5.6K 1/10W
R132	NRSA02J-272	MGR	2.7K 1/10W
R133	NRSA02J-472	MGR	4.7K 1/10W
R134	NRSA02J-333	MGR	33K 1/10W
R136	NRSA02J-472	MGR	4.7K 1/10W
R137	QVPB613-502	VR	5.0K BURST LEVEL
R138	NRSA02J-223	MGR	22K 1/10W
R139	NRSA02J-223	MGR	22K 1/10W
R140	NRSA02J-223	MGR	22K 1/10W
R141	NRSA02J-103	MGR	10K 1/10W
R142	NRSA02J-472	MGR	4.7K 1/10W
R143	NRSA02J-392	MGR	3.9K 1/10W
R144	NRSA02J-392	MGR	3.9K 1/10W
R145	NRSA02J-472	MGR	4.7K 1/10W
R146	NRSA02J-472	MGR	4.7K 1/10W
R147	NRSA02J-562	MGR	5.6K 1/10W
C1	QER41AM-476	E CAP	47 10V
C2	NCT03CH-560	C CAP	56P 50V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	QER41AM-476	E CAP	47 10V
C6	QER40JM-476	E CAP	47 6.3V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	QER40JM-476	E CAP	47 6.3V
C9	QER41AM-476	E CAP	47 10V
C10	QEP40JM-476	NP CAP	47 6.3V
C11	QER41EM-106	E CAP	10 25V
C12	QER41EM-106	E CAP	10 25V
C13	QER41AM-476	E CAP	47 10V
C14	QER41AM-476	E CAP	47 10V
C15	QER41AM-476	E CAP	47 10V
C16	QER41AM-476	E CAP	47 10V
C17	QER41AM-476	E CAP	47 10V
C18	QER41AM-476	E CAP	47 10V
C19	NCF21EZ-104	C CAP	0.10 25V
C20	NCF21EZ-104	C CAP	0.10 25V
C21	QER41AM-476	E CAP	47 10V
C22	NCT03CH-560	C CAP	56P 50V
C23	NCT03CH-560	C CAP	56P 50V
C24	QER40JM-476	E CAP	47 6.3V
C25	QER41AM-476	E CAP	47 10V
C26	QER40JM-476	E CAP	47 6.3V
C27	NCF21EZ-104	C CAP	0.10 25V
C28	NCF21EZ-104	C CAP	0.10 25V
C29	NCF21EZ-104	C CAP	0.10 25V
C30	NCF21EZ-104	C CAP	0.10 25V
C31	NCT03CH-560	C CAP	56P 50V
C32	NCT03CH-560	C CAP	56P 50V
C33	NCT03CH-560	C CAP	56P 50V
C34	NCT03CH-560	C CAP	56P 50V
C35	QER41EM-106	E CAP	10 25V
C36	QER41EM-106	E CAP	10 25V
C37	NCT03CH-560	C CAP	56P 50V
C38	NCF21EZ-104	C CAP	0.10 25V
C39	QER41EM-106	E CAP	10 25V
C40	NCF21EZ-104	C CAP	0.10 25V
C41	NCT03CH-560	C CAP	56P 50V
C42	QER40JM-476	E CAP	47 6.3V
C43	QER41AM-106	E CAP	10 25V
C44	QER41AM-475	T CAP	4.7 10V
C45	QER41AM-106	E CAP	10 25V
C46	NCF21EZ-104	C CAP	0.10 25V
C47	NCF21EZ-104	C CAP	0.10 25V
C48	NCT03CH-560	C CAP	56P 50V
C49	GAT3120-200	TR CAP	56P 50V
C50	QCT05UJ-100	C CAP	10P 50V
C51	NCF21EZ-104	C CAP	0.10 25V
C52	NCF21EZ-104	C CAP	0.10 25V
C53	NCT03CH-560	C CAP	56P 50V
C54	GAT3120-200	TR CAP	56P 50V
C55	NCT03CH-101	C CAP	100P 50V
C56	NCT03CH-221	C CAP	220P 50V
C57	NCT03CH-121	C CAP	120P 50V
C58	NCF21EZ-104	C CAP	0.10 25V
C59	NCT03CH-220	C CAP	22P 50V
C60	NCS21HJ-102	C CAP	1000P 50V
C61	NCT03CH-101	C CAP	100P 50V
C62	NCT03CH-330	C CAP	33P 50V
C63	QER40JM-476	E CAP	47 6.3V
C64	NCF21EZ-103	C CAP	0.010 50V
C65	NCF21EZ-103	C CAP	0.010 50V
C66	QER40JM-476	E CAP	47 6.3V

Symbol No.	Part No.	Part Name	Description
C67	NCF21EZ-103	C CAP	0.010 50V
C68	QER40JM-476	E CAP	47 6.3V
C69	NCF21EZ-103	C CAP	0.010 50V
C70	QER41AM-476	E CAP	47 10V
C71	QETA1AM-227	E CAP	220 10V
C72	NCS21HJ-102	C CAP	1000P 50V
C73	NCF21EZ-104	C CAP	0.10 25V
C74	NCT03CH-101	C CAP	100P 50V
C75	NCT03CH-470	C CAP	47P 50V
L1	SCV0331-4R7	PEAKING COIL	4.7μH
L2	SCV0331-100	PEAKING COIL	10μH
L3	SCV0331-390	PEAKING COIL	39μH
L4	SCV0331-220	PEAKING COIL	22μH
L5	SCV0983-500	COIL	50μH
DL1	SCV0639-001	DELAY LINE	
X1	SCV0348-002	CRYSTAL	4.43MHZ
X2	SCV0349-002	CRYSTAL	15.625KHZ
CN3	SCV0501-001	CONNECTOR	30PIN
T1	SCV0171-001	TRANSFORMER	
T2	SCV0171-001	TRANSFORMER	
• CBM1	CBMC4299-P0A	R-Y(P) CBM	
Q1	2SC2239(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-102	MGR	1.0K 1/10W
R2	NRSA02J-182	MGR	1.8K 1/10W
R3	NRSA02J-152	MGR	15K 1/10W
R4	NRSA02J-272	MGR	2.7K 1/10W
R5	NRSA02J-682	MGR	6.8K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-122	MGR	1.2K 1/10W
R8	NRSA02J-562	MGR	5.6K 1/10W
C1	NCT03CH-121	C CAP	120P 50V
C2	NCT03CH-560	C CAP	56P 50V
	SCV1210-006	CONNECTOR	











## 7.11 CP board assembly

Symbol No.	Part No.	Part Name	Description	Symbol No.	Part No.	Part Name	Description
IC1	TA78L005AP	IC	TOSHIBA	R64	NRSA02J-103	MGR	10K 1/10W
IC2	TL7705CP	IC	TEXAS	R65	NRSA02J-103	MGR	10K 1/10W
IC3	NJM2902M	IC	JRC	R66	NRSA02J-103	MGR	10K 1/10W
IC4	SCV1182-001	FUNCTION MODULE	JVC	R67	NRSA02J-103	MGR	10K 1/10W
IC5	PLSC1025	IC (CPU)	NTSC,HD63705Z0F	R68	NRSA02J-103	MGR	10K 1/10W
	PLSC1026	IC (CPU)	PAL,HD63705Z0F	R69	NRSA02J-103	MGR	10K 1/10W
				R70	NRSA02J-103	MGR	10K 1/10W
IC6	IR9K08	IC	SHARP	R71	NRSA02J-103	MGR	10K 1/10W
IC7	M50452-001P	IC	MITSUBISHI				
IC8	M889009P-G-106	IC	FUJITSU	R72	NRSA02J-103	MGR	10K 1/10W
IC9	SC2444-101	IC	SEIKO	R73	NRSA02J-103	MGR	10K 1/10W
IC10	TC50H001F	IC	TOSHIBA	R74	NRSA02J-223	MGR	10K 1/10W
IC11	TC40H004F	IC	TOSHIBA	R75	NRSA02J-223	MGR	10K 1/10W
				R76	NRSA02J-223	MGR	10K 1/10W
Q1	DTC124K	TRANSISTOR	ROHM	R77	NRSA02J-223	MGR	22K 1/10W
Q2	DTC124K	TRANSISTOR	ROHM	R78	NRSA02J-223	MGR	22K 1/10W
Q3	DTC124K	TRANSISTOR	ROHM	R79	NRSA02J-223	MGR	22K 1/10W
Q4	DTC124K	TRANSISTOR	ROHM	R80	NRSA02J-223	MGR	22K 1/10W
Q5	DTC124K	TRANSISTOR	ROHM	R81	NRSA02J-223	MGR	22K 1/10W
Q6	DTC124K	TRANSISTOR	ROHM	R82	NRSA02J-104	MGR	100K 1/10W
Q7	DTC124K	TRANSISTOR	ROHM				
Q8	DTC124K	TRANSISTOR	ROHM	RA1	GRB081K-223	R.NETWORK	22K
Q9	2SA1022(B.C)	TRANSISTOR	YATSUSHITA	RA2	GRB081K-223	R.NETWORK	22K
Q10	DTC124K	TRANSISTOR	ROHM				
D1	MA152WK	DIODE	YATSUSHITA	C1	QER41CM-476	CAP	47 16V
D2	MA152WK	DIODE	YATSUSHITA	C2	QER41CM-476	CAP	47 16V
D3	MA152A	DIODE	YATSUSHITA	C3	QER41CM-476	CAP	47 16V
D4	MA152WK	DIODE	YATSUSHITA	C4	NCF21HZ-103	CAP	0.010 50V
				C5	QER41CM-476	CAP	47 16V
R1	NRSA02J-104	MGR	100K 1/10W	C6	QER41EM-106	CAP	10 50V
R2	NRSA02J-103	MGR	10K 1/10W	C7	QER41EM-106	CAP	10 50V
R3	NRSA02J-101	MGR	100 1/10W	C8	NCF21EZ-104	CAP	0.10 50V
R4	NRSA02J-272	MGR	2.7K 1/10W	C9	NCT03CH-220	CAP	0.10 50V
R5	NRSA02J-103	MGR	10K 1/10W	C10	NCT03CH-220	CAP	0.10 50V
R6	NRSA02J-223	MGR	22K 1/10W	C11	NCF21EZ-104	CAP	0.10 50V
R7	NRSA02J-104	MGR	220K 1/10W	C12	QER41EM-106	CAP	10 50V
R8	NRSA02J-223	MGR	22K 1/10W	C13	QER41EM-106	CAP	10 50V
R9	NRSA02J-102	MGR	22K 1/10W	C14	NCF21EZ-104	CAP	0.10 50V
R10	NRSA02J-102	MGR	1.0K 1/10W	C15	NCF21EZ-104	CAP	0.10 50V
R11	NRSA02J-101	MGR	100 1/10W	C16	QER41HM-105	CAP	10 50V
R12	NRSA02J-122	MGR	1.2K 1/10W	C17	NCT03CH-220	CAP	0.10 50V
R13	NRSA02J-122	MGR	1.2K 1/10W	C18	NCT03CH-220	CAP	0.10 50V
R14	NRSA02J-122	MGR	1.2K 1/10W	C19	QER41CM-476	CAP	47 16V
R15	NRSA02J-122	MGR	1.2K 1/10W	C20	NCF21EZ-104	CAP	0.10 50V
R16	NRSA02J-472	MGR	4.7K 1/10W	C21	QER41CM-476	CAP	47 16V
R17	NRSA02J-472	MGR	4.7K 1/10W	C22	NCF21EZ-104	CAP	0.10 50V
R18	NRSA02J-103	MGR	10K 1/10W	C23	QER41HM-105	CAP	10 50V
R19	NRSA02J-103	MGR	10K 1/10W	C24	QER41HM-475	CAP	47 50V
R20	NRSA02J-103	MGR	10K 1/10W				
R21	QVPB614-203	VR	20K B BLK	C26	NCF21HZ-103	CAP	0.010 50V
R22	QVPB614-203	VR	20K B WHT	C27	NCF21HZ-103	CAP	0.010 50V
R23	NRSA02J-473	MGR	47K 1/10W	C28	NCT03CH-330	CAP	0.33 50V
R24	NRSA02J-103	MGR	10K 1/10W	C29	NCF21EZ-104	CAP	0.10 50V
R25	NRSA02J-472	MGR	4.7K 1/10W	C30	NCT03CH-191	CAP	0.10 50V
R26	NRSA02J-473	MGR	47K 1/10W	C31	NCF21EZ-104	CAP	0.10 50V
R27	QVPB614-203	VR	20K R BLK	C32	NCT03CH-220	CAP	0.22 50V
R28	QVPB614-203	VR	20K R WHT	C33	NCT03CH-220	CAP	0.22 50V
R29	NRSA02J-473	MGR	47K 1/10W				
R30	NRSA02J-103	MGR	10K 1/10W	L1	SMV2223	BEAKING COIL	10 4H
R31	QVPB614-102	VR	1.0K IRIS LEVEL	L2	SMV2223	BEAKING COIL	10 4H
R32	NRSA02J-182	MGR	1.8K 1/10W	L3	SMV2223	BEAKING COIL	10 4H
R33	NRSA02J-103	MGR	10K 1/10W				
R34	QVPB614-203	VR	20K MASTER BLK	X1	SCV1238-001	CRYSTAL	3.6864MHz
R35	NRSA02J-393	MGR	39K 1/10W				
R36	NRSA02J-332	MGR	3.3K 1/10W	S1	SCV1311-001	ROTARY SWITCH	PIX SEL SW
R37	QVPB614-202	VR	2.0K 12V DET	S2	SCV1335-002	DIP SWITCH	CC SW/CH SW
R38	NRSA02J-103	MGR	10K 1/10W				
R39	NRSA02J-122	MGR	1.2K 1/10W	CN1	SCV0501-001	CONNECTOR	30PIN
R40	NRSA02J-223	MGR	22K 1/10W	CN2	SCV0501-001	CONNECTOR	30PIN
R41	NRSA02J-222	MGR	2.2K 1/10W				
R42	NRSA02J-103	MGR	10K 1/10W				
R43	NRSA02J-103	MGR	10K 1/10W				
R44	NRSA02J-223	MGR	22K 1/10W				
R45	NRSA02J-223	MGR	22K 1/10W				
R46	NRSA02J-103	MGR	10K 1/10W				
R47	NRSA02J-103	MGR	10K 1/10W				
R48	NRSA02J-103	MGR	10K 1/10W				
R49	NRSA02J-330	MGR	33K 1/10W				
R50	NRSA02J-223	MGR	22K 1/10W				
R51	NRSA02J-472	MGR	4.7K 1/10W				
R52	NRSA02J-101	MGR	100 1/10W				
R53	NRSA02J-101	MGR	100 1/10W				
R54	NRSA02J-103	MGR	10K 1/10W				
R55	NRSA02J-103	MGR	10K 1/10W				
R56	NRSA02J-103	MGR	10K 1/10W				
R57	NRSA02J-103	MGR	10K 1/10W				
R58	NRSA02J-103	MGR	10K 1/10W				
R59	NRSA02J-103	MGR	10K 1/10W				
R60	NRSA02J-103	MGR	10K 1/10W				
R61	NRSA02J-103	MGR	10K 1/10W				
R62	NRSA02J-103	MGR	10K 1/10W				
R63	NRSA02J-103	MGR	10K 1/10W				



Symbol No.	Part No.	Part Name	Description
• CBM1	CBMC4226-00A	AW/AB DET 1 CMB	
• CBM2	CBMC4226-00A	AW/AB DET 1 CBM	
• CBM3	CBMC4226-00A	AW/AB DET 1 CBM	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SK360	FET	HITACHI
Q6	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-102	MGR	1.0K 1/10W
R2	NRSA02J-152	MGR	1.5K 1/10W
R3	NRSA02J-331	MGR	330 1/10W
R4	NRSA02J-471	MGR	470K 1/10W
R5	NRSA02J-104	MGR	100K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-474	MGR	470K 1/10W
R8	NRSA02J-104	MGR	100K 1/10W
R9	NRSA02J-154	MGR	150K 1/10W
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-474	MGR	470K 1/10W
R12	NRSA02J-104	MGR	100K 1/10W
C1	NCT03CH-680	C CAP	68P 50V
C2	NCF21EZ-104	C CAP	0.10 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCF21EZ-104	C CAP	0.10 25V
	SCV1210-006	CONNECTOR	
• CBM4	CBMC4306-00A	AW/AB DET 2 CBM	
IC1	LM2904M	IC	NATIONAL SEMICONDUCTOR
IC2	LM2904M	IC	NATIONAL SEMICONDUCTOR
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
R1	NRSA02J-103	MGR	10K 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-103	MGR	10K 1/10W
R6	NRSA02J-103	MGR	10K 1/10W
R7	NRSA02J-474	MGR	470K 1/10W
R8	NRSA02J-104	MGR	100K 1/10W
R9	NRSA02J-333	MGR	33K 1/10W
R10	NRSA02J-472	MGR	4.7K 1/10W
R11	NRSA02J-474	MGR	470K 1/10W
R12	NRSA02J-104	MGR	100K 1/10W
R13	NRSA02J-333	MGR	33K 1/10W
R14	NRSA02J-103	MGR	10K 1/10W
R15	NRSA02J-474	MGR	470K 1/10W
R16	NRSA02J-104	MGR	100K 1/10W
R17	NRSA02J-333	MGR	33K 1/10W
R18	NRSA02J-472	MGR	4.7K 1/10W
R19	NRSA02J-333	MGR	33K 1/10W
R20	NRSA02J-123	MGR	12K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
	SCV1210-012	CONNECTOR (CLIP LEAD)	

Symbol No.	Part No.	Part Name	Description
• CBM5	CBMC4303-00A	NAM DET CBM	
IC1	LM2904M	IC	NATIONAL SEMICONDUCTOR
Q2	DTC124K	TRANSISTOR	ROHM
D1	MA152A	DIODE	MATSUSHITA
D2	MA152A	DIODE	MATSUSHITA
D3	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-183	MGR	18K 1/10W
R2	NRSA02J-153	MGR	15K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-803	MGR	8.2K 1/10W
R5	NRSA02J-562	MGR	5.6K 1/10W
R6	NRSA02J-333	MGR	33K 1/10W
R7	NRSA02J-153	MGR	15K 1/10W
R8	NRSA02J-183	MGR	18K 1/10W
R9	NRSA02J-473	MGR	47K 1/10W
R10	NRSA02J-100	MGR	10 1/10W
R11	NRSA02J-223	MGR	22K 1/10W
R12	NRSA02J-222	MGR	2.2K 1/10W
R13	NRSA02J-154	MGR	150K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
	SCV1210-006	CONNECTOR	



## 7.12 PS board assembly 1 2

1 2

Symbol No.	Part No.	Part Name	Description
IC1	TA78L008AP	IC	TOSHIBA
IC2	CA3130E	IC	RCA
IC3	DN819	IC	MATSUSHITA
IC4	TC4001BP	IC	TOSHIBA
IC5	NJM79L05A	IC	JRC
Q1	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q2	2SC1384(R)	TRANSISTOR	MATSUSHITA
Q3	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q4	2SA564(R)	TRANSISTOR	MATSUSHITA
Q5	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q6	2SA564(R)	TRANSISTOR	MATSUSHITA
Q7	2SD1348(S.T)	TRANSISTOR	MATSUSHITA
Q8	2SD1348(S.T)	TRANSISTOR	MATSUSHITA
D1	MA165	DIODE	MATSUSHITA
D2	MA165	DIODE	MATSUSHITA
D3	ERA82-004V3	DIODE	MATSUSHITA
D4	ERA82-004V3	DIODE	FUJI ELECTRIC
D5	ERA82-004V3	DIODE	FUJI ELECTRIC
D6	ERA82-004V3	DIODE	FUJI ELECTRIC
D7	H23BL	ZENER DIODE	HITACHI
D8	HZ6(2C)L	ZENER DIODE	HITACHI
D9	MA165	DIODE	MATSUSHITA
D10	MA165	DIODE	MATSUSHITA
D11	HZ6(2C)L	ZENER DIODE	HITACHI
R1	QRD161J-822	CR	3.2K 1/6W
R2	QRD161J-472	CR	4.7K 1/6W
R3	QRD161J-682	CR	6.8K 1/6W
R4	QRD161J-181	CR	180 1/6W
R5	QRD161J-122	CR	1.2K 1/6W
R6	QVP8614-102	VR	1.0K +9V ADJ
R7	QRD161J-682	CR	6.8K 1/6W
R8	QRD161J-471	CR	470 1/6W
R9	QRD161J-471	CR	470 1/6W
R10	QRD161J-152	CR	1.5K 1/6W
R11	QRD161J-103	CR	10K 1/6W
R12	QRD161J-471	CR	470 1/6W
R13	QRD161J-471	CR	470 1/6W
R14	QRD161J-100	CR	10 1/6W
C1	QER41CM-227	E CAP	220 16V
C2	QER41EM-106	E CAP	10 25V
C3	QER41HM-475	E CAP	4.7 50V
C4	QCS11HJ-470	E CAP	47P 50V
C5	QER41HM-105	E CAP	1.0 50V
C6	QETA1AM-227	E CAP	220 10V
C7	QETA1AM-227	E CAP	220 10V
C8	QER41EM-106	E CAP	10 25V
C9	QER41EM-106	E CAP	10 25V
C10	QETA1AM-227	E CAP	220 10V
C11	QETA1AM-227	E CAP	220 10V
C12	QETA1EM-477	E CAP	470 25V
C13	QETA1EM-227	E CAP	220 25V
C14	QETA1AM-477	E CAP	470 10V
C15	QER41EM-106	E CAP	10 25V
C16	QFN41HJ-103	MY CAP	0.010 50V
L1	SCV0983-500	COIL	50μH
L2	SCV0983-500	COIL	50μH
CN12	SCV1227-002	CONNECTOR	2PIN
CN16	SCV1227-011	CONNECTOR	11PIN
CN18	SCV1227-003	CONNECTOR	3PIN
T1	SCV1312-002	POWER TRANS	

## 7.13 AU board assembly 1 3

1 3

Symbol No.	Part No.	Part Name	Description
IC1	NJM2068MD	IC	JRC
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
D2	MA153	DIODE	MATSUSHITA
D3	MA153	DIODE	MATSUSHITA
R1	NRSA02J-473	MGR	47K 1/10W
R2	NRSA02J-473	MGR	47K 1/10W
R3	NRSA02J-102	MGR	1.0K 1/10W
R4	NRSA02J-100	MGR	10 1/10W
R5	NRSA02J-681	MGR	680 1/10W
R6	NRSA02J-682	MGR	6.8K 1/10W
R7	NRSA02J-560	MGR	56 1/10W
R8	NRSA02J-681	MGR	680 1/10W
R9	NRSA02J-682	MGR	6.8K 1/10W
R10	NRSA02J-560	MGR	56 1/10W
R11	NRSA02J-473	MGR	4.7K 1/10W
R12	NRSA02J-473	MGR	4.7K 1/10W
R13	NRSA02J-101	MGR	100 1/10W
R14	NRSA02J-102	MGR	1.0K 1/10W
R15	NRSA02J-101	MGR	100 1/10W
R16	NRSA02J-102	MGR	1.0K 1/10W
R17	NRSA02J-103	MGR	1.0K 1/10W
R18	NRSA02J-103	MGR	1.0K 1/10W
R19	NRSA02J-030	MGR	30 1/10W
R20	NRSA02J-220	MGR	22 1/10W
R21	QRZ0052-100	FUSEBLE R	10 1/4W
C1	QER41AM-476	E CAP	47 10V
C2	NCF21EZ-104	E CAP	0.10 25V
C3	QER41AM-476	E CAP	47 10V
C4	NCT03CH-331	E CAP	330P 50V
C5	QER41EM-106	E CAP	10 25V
C6	NCB21HK-222	E CAP	2200P 50V
C7	QER41AM-106	E CAP	10 10V
C8	NCT03CH-331	E CAP	330P 50V
C9	QER41EM-106	E CAP	10 25V
C10	QER40JM-476	E CAP	47 6.3V
C11	NCB21HK-222	E CAP	2200P 50V
C12	QER41AM-106	E CAP	10 10V
C13	QER41AM-476	E CAP	47 10V
LC1	EXC-EMT271BT	EMI FILTER	
CN19	SCV1227-007	CONNECTOR	7PIN
CN24	SCV1227-002	CONNECTOR	2PIN
CN25	SCV1227-003	CONNECTOR	3PIN
CN28	SCV1227-006	CONNECTOR	6PIN
CN29	SCV1227-003	CONNECTOR	3PIN



## 7.14 MT board assembly 14

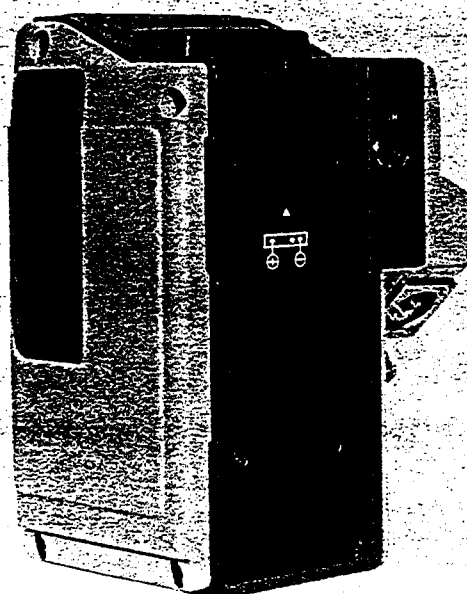
14

Symbol No.	Part No.	Part Name	Description
IC1	TA78L005AP	IC	TOSHIBA
IC2	NJM4556D	IC	JRC
Q1	DTA124ES	TRANSISTOR	ROHM
Q2	DTA124ES	TRANSISTOR	ROHM
Q3	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q4	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q5	DTA124ES	TRANSISTOR	ROHM
Q6	DTC124ES	TRANSISTOR	ROHM
D1	MA165	DIODE	MATSUSHITA
R1	QRD161J-103	CR	10K 1/6W
R2	QRD161J-152	CR	1.5K 1/6W
R3	QRD161J-472	CR	4.7K 1/6W
R4	QRD161J-561	CR	560 1/6W
R5	QRD161J-101	CR	100 1/6W
R6	QRD161J-101	CR	100 1/6W
R7	QRD161J-332	CR	3.3K 1/6W
R8	QRD161J-183	CR	18K 1/6W
R9	QRD161J-223	CR	22K 1/6W
R10	QRD161J-102	CR	1.0K 1/6W
R11	QRD161J-102	CR	1.0K 1/6W
R12	QRD161J-562	CR	5.6K 1/6W
R13	QRD161J-750	CR	75 1/6W
R14	QRD161J-562	CR	5.6K 1/6W
R15	QRD161J-223	CR	22K 1/6W
R16	QRD161J-223	CR	22K 1/6W
R17	QRD161J-332	CR	3.3K 1/6W
R18	QRD161J-103	CR	10K 1/6W
C1	QER41CM-476	E CAP	47 16V
C2	QER41AM-106	T CAP	10 10V
C3	QER40JM-476	E CAP	47 6.3V
C4	QFN41HJ-102	MY CAP	1000P 50V
C5	QER41CM-476	E CAP	47 16V
C6	QER40JM-476	E CAP	47 6.3V
C7	QER41AM-106	T CAP	10 10V
C8	QER40JM-476	E CAP	47 6.3V
SW1	SSV0997-2100	DIP SWITCH	FRAME/FIELD
CN1	SCV0500-001	CONNECTOR	30PIN CP
CN2	SCV0500-001	CONNECTOR	30PIN CP
CN3	SCV0500-001	CONNECTOR	30PIN SE
CN4	SCV0500-001	CONNECTOR	30PIN PR2
CN5	SCV0500-001	CONNECTOR	30PIN PR1
CN11	SCV1319-15P	CONNECTOR	15PIN
CN21	SCV1227-012	CONNECTOR	12PIN
CN22	SCV1228-013	CONNECTOR	13PIN
CN23	SCV1227-006	CONNECTOR	6PIN
CN26	SCV1227-004	CONNECTOR	4PIN
CN27	SCV1251-50S	CONNECTOR	50PIN
CN30	SCV1227-003	CONNECTOR	3PIN
CN31	SCV1227-010	CONNECTOR	10PIN



# JVC Service Manual

For remaining sections of this booklet contents the servicing instructions.  
Following sections are for use by qualified personnel only.



**CAMERA ADAPTER (KA-20)**



## TABLE OF CONTENTS

**WARNING:**  
THE REMAINING PORTION OF THIS TABLE  
OF CONTENTS LISTS THE SERVICING IN-  
STRUCTIONS. FOLLOWING SECTIONS ARE  
FOR USE BY QUALIFIED PERSONNEL ONLY.

Section	Title	Page
1.	CIRCUIT DESCRIPTION .....	1 - 1
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	(See the section 3 of KY-25/KY-R25)	
4.	REPACKING .....	4 - 1
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6.	CHARTS AND DIAGRAMS .....	6 - 1
7.	ELECTRICAL PARTS LIST .....	7 - 1





# SECTION 1 CIRCUIT DESCRIPTION

## 1.1 VP BOARD

This is the circuit which receives the video signal from the KY-25 camera head and sends all the necessary signals to the VTR or Remote control unit.

The power (+9 V DC) necessary for the video processing system is supplied from the camera head via the 50-pin interface connector.

R/G/B and R-Y/Y1(Y2)/B-Y signals supplied from the camera head enter CBM1, while chroma signal for the S-VHS mode directly enters IC1-A.

These signals input to CBM1 and IC1-A are further sent to S1 and S3 (CT board) which switch coming signals on and off according to their setting positions for video signal output through the VTR connector.

Relation between setting positions of S1 and S3 and output signals is shown in the following table.

Special care is necessary for use in the VTR or RM mode (MODE switch).

If Y/C switch on the VP board is set to "ON", component signals R-Y/Y/B-Y or R/G/B are not output.

IC2 and IC3 comprise an input/output driver which handles the control data between the camera head and the remote control unit when the RM-P200 is connected.

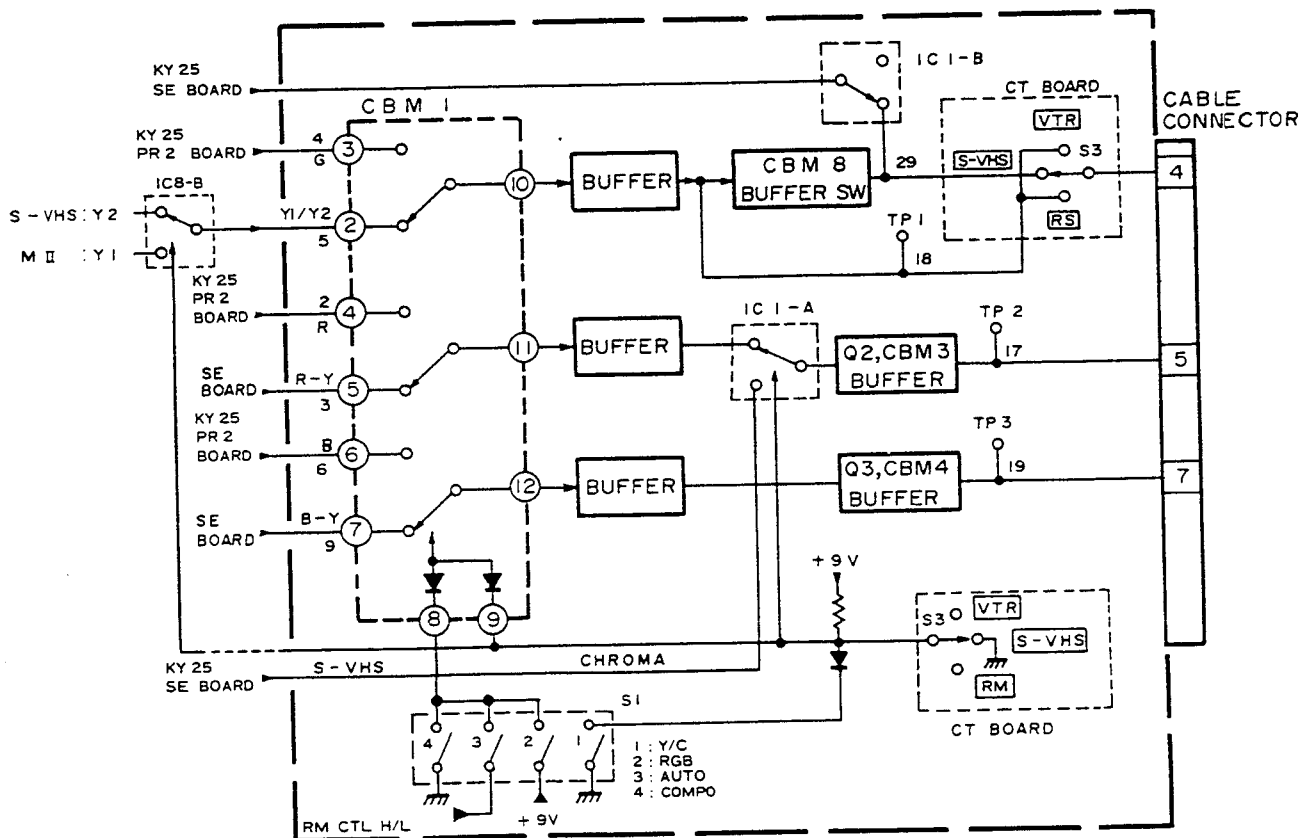


Fig. 1-1 VP board video lines



## 1.2 GL BOARD

This is the circuit which locks the KY-25 camera head to an external sync signal.

CBM-1 is a sync signal separator. As the external reference signal, a black burst signal is necessary.

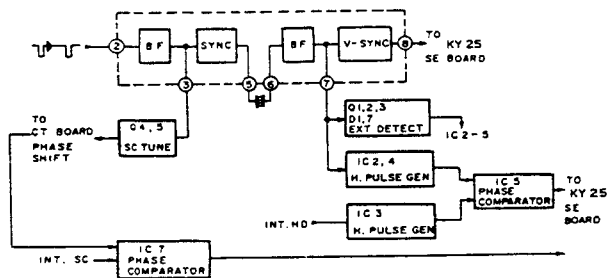


Fig. 1-2 GL board

The burst subcarrier is separated from the black burst by Q4 and Q5, and its phase is adjusted by the CT board. The subcarrier is fed back to the GL board and, at IC7, phase-compared with the subcarrier generated by the SSG in the camera head. The resulting error signal controls the SSG in the camera head.

The H sync is output via pin 7 of CBM-1 and shaped into H sync pulses by IC2 and IC4. The HD pulse generated by the SSG in the camera head is also shaped by IC3.

IC5 compares the phases of these two H sync signals. The resulting error signal controls the oscillation frequency of the H-clock oscillator on the SE board in the camera head.

The presence of external sync signals is detected by D1 and D7, and Q1, Q2 and Q3. When an external sync signal is detected, signals are applied via Q3 to ICs 1, 2, 3, 4, 5 and IC7, and to CBM-2. At the same time, the output of Q1 switches the SSG in the camera head to accept the external sync signal.

The H sync phase externally controls and adjusts the time constant of mono-stable multi-vibrator IC3.

Depending on whether the RM-P200 is connected or not, a different adjusting VR is used. This switching is done by IC1-A.

## SECTION 2 DISASSEMBLY

- See the section 2 of KY-25/KY-R25.

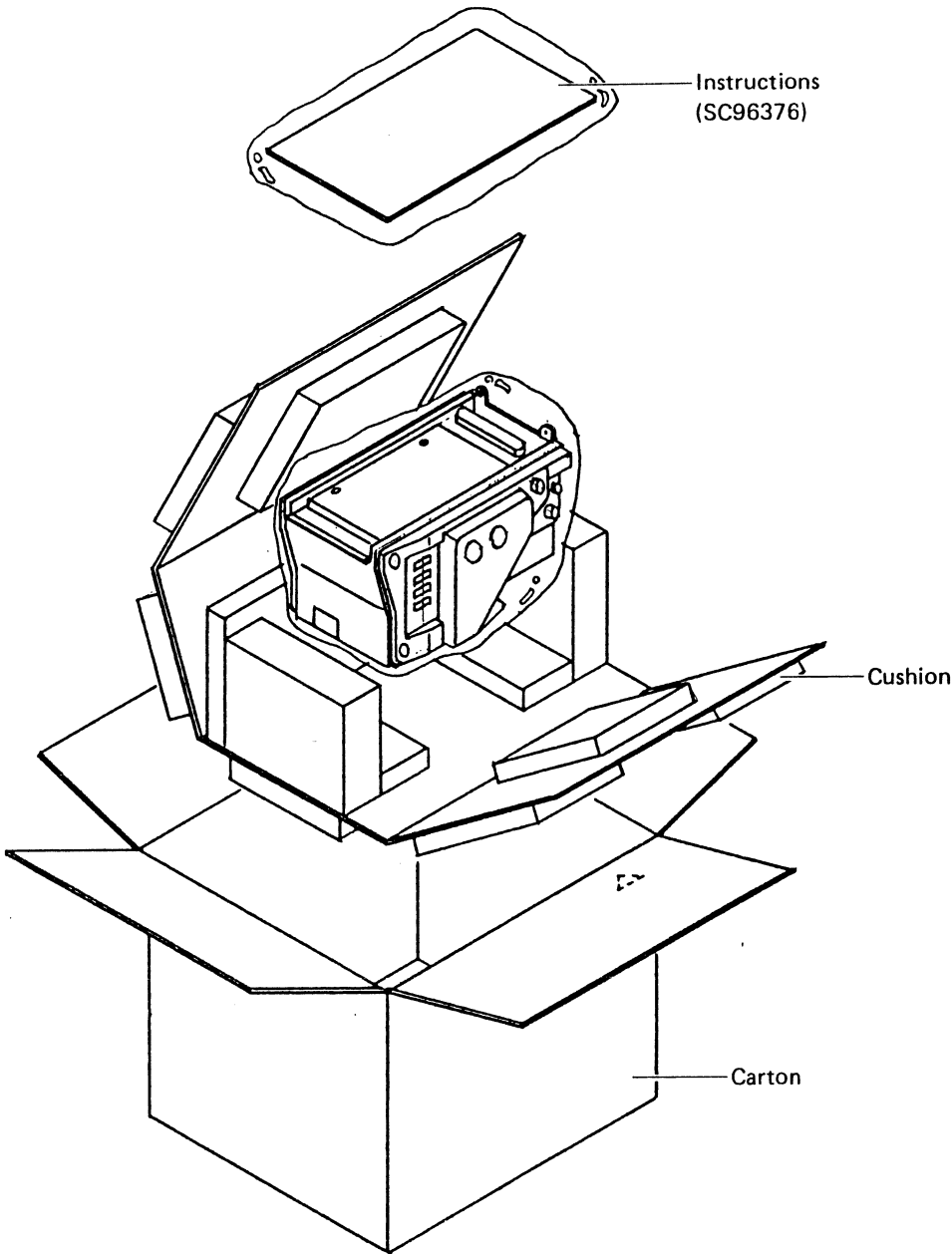
## SECTION 3 ELECTRICAL ADJUSTMENT

- See the section 3 of KY-25/KY-R25.



SECTION 4  
REPACKING

4.1 CAMERA ADAPTER KA-20 REPACKING

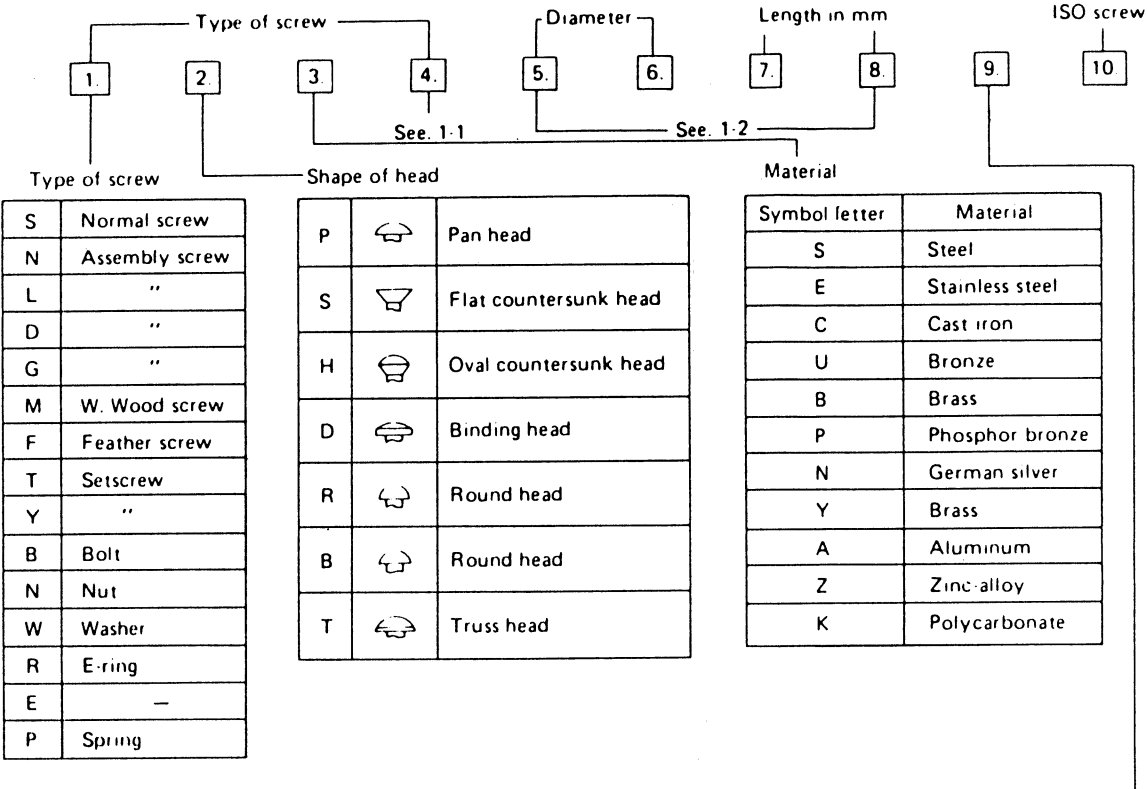


SECTION 5  
EXPLODED VIEW AND PARTS LIST

Note: Replacing marked  $\triangle$  parts, be sure to use parts specified for safety purposes.  
In this exploded views the part number of the screws and washers designate the type and dimensions of those items.  
The following examples will help you to decipher them.

5.1 STANDARD PART NUMBER CODING

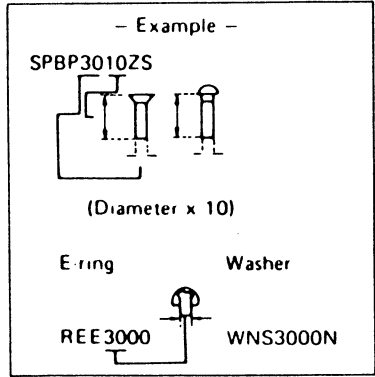
5.1.1 Screw coding



1-1 Type of screw

P	Cross-Recessed head screw
A	Tapping screw
B	Tapping screw
T	Tapping screw
E	Tapping screw

1-2 Diameter and Length of screw

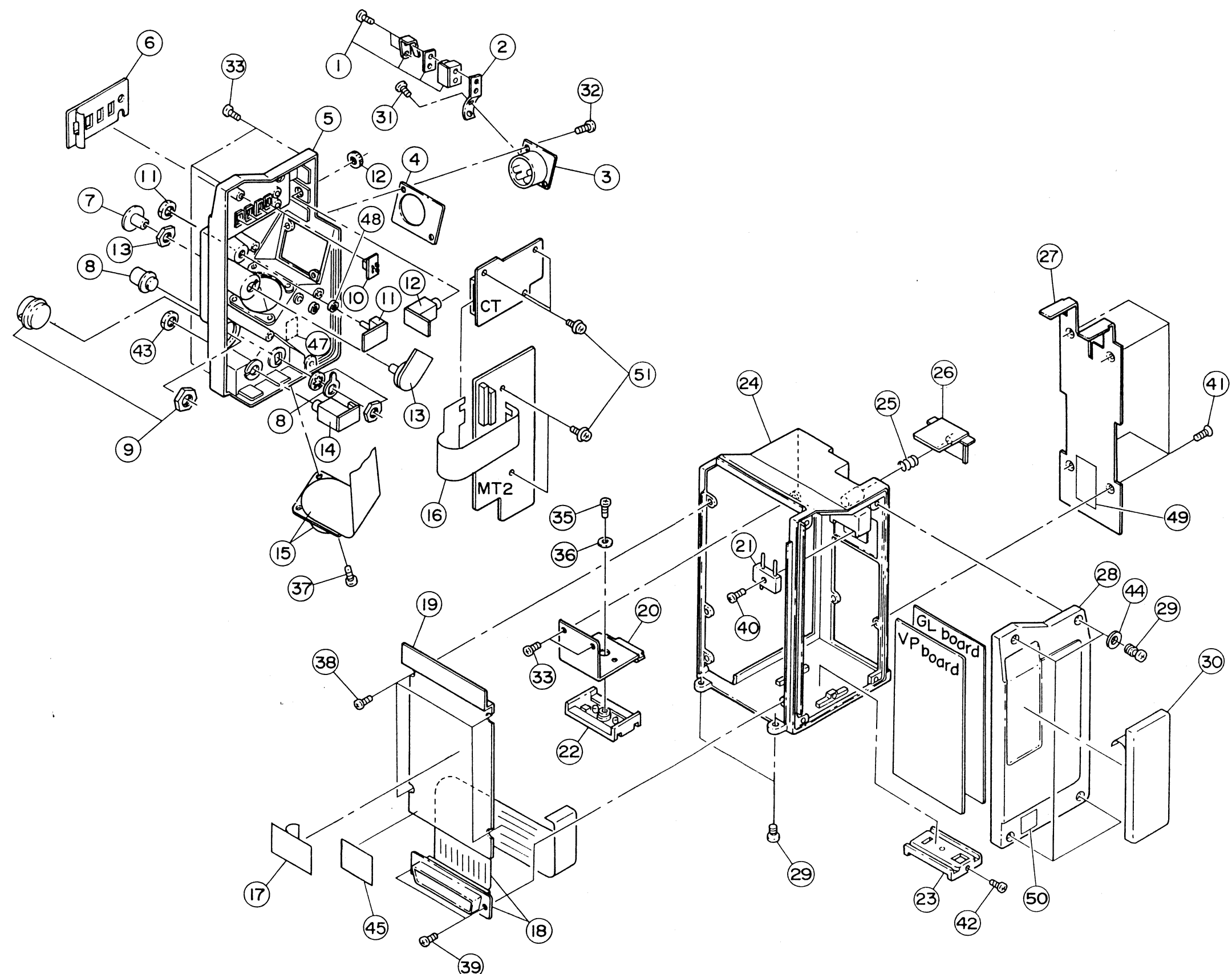


Surface treatment

Symbol letter	Surface treatment
Z	Galvanization, dichromic acid treatment (MFZn2·C)
N	Nickel plating (MFNi2, MFNi1)
R	Chrome plating (MBCr2, MBCr1)
G	Silver plating (SP4)
W	Nichrome platings
P	Phosphite treatment
B	Bronze plating
M	Black coloring after galvanization
A	Red coloring after galvanization
C	Blue coloring after galvanization
T	Green coloring after galvanization
V	Violet coloring after galvanization
F	Iron with black coloring



5.2 EXPLODED VIEW AND PARTS LIST  
5.2.1 CAMERA ADAPTER (KA-20) assembly M2







Symbol No.	Part No.	Part Name	Description
△	1 SCV0399-001	Actuator	4 Pin J6 "DC INPUT"
	2 SC40752-004	Bracket	
	3 SCV0462-04P	XLR Connector	
	4 SC43445-003	Plate	
	5 SC10076-003 SC10076-004	L. Side Cover L. Side Cover	
	6 SC43513-021	Name Plate	U version E version  Nut included "GEN LOCK IN" Nut included 7 Pin "Y/C 358(443) OUT"
	7 SC43513-022	Name Plate	
	8 SC43505-001	Knob	
	9 SCV0749-011	BNC Connector	
	10 SCV1214-002	Connector	
	10 SC43403-001	Knob	
△	11 SCV1298-001	Toggle Switch	S8 "POWER" J9 "EARPHONE" R1 "INCOM LEVEL" J8 "INCOM" FPC included 26Pin "VTR/RM"
	12 QMS3501-013	Jack	
	13 SCV0515-202	VR	
	14 SCV0632-001	Jack	
	15 SCV1279-002	Connector Assembly	
△	16 SCV1280-001	FPC	50 Pin FPC included
	17 Not Available	Serial No. Plate	
	18 SCV1278-001	Connector Assembly	
	19 SC31054-001	Front Panel	
	20 SC43530-001	Bracket	
△	21 SCV0630-02P	Connector	2 Pin "DC IN"
	22 SC43503-002	Rail (Upper)	
	23 SC43503-001	Rail (Lower)	
	24 SC10074-011	Frame	
	25 SC41384-001	Spring	
△	26 SC41385-001	Cover	
	27 SC30515-003	Slide Base	
	28 SC20339-002	R. Side Cover	
	29 SC43397-002	Screw	
	30 SC43504-002 SC43828-001	Pad Sheet	
	31 SPBP2003N	Screw	M2 × 3 M2.6 × 6 M3 × 6  M2.6 × 6
	32 SPSP2606N	Screw	
	33 SDSP3006R	Screw	
	34 —	—	
	35 SDSA2606Z	Screw	
	36 Q03091-138	Washer	M3 × 6 M2.6 × 4 M2 × 6 M2.6 × 10
	37 SPSP3006N	Screw	
	38 SDSP2604R	Screw	
	39 SPSP2006N	Screw	
	40 LPSP2610Z	Screw	
	41 SSSP2606M	Screw	M2.6 × 6 M2.6 × 6
	42 SDSP2606M	Screw	
	43 SC43628-001	Nut	
	44 —	—	
	45 SC41058-004	Caution Label	
	46 —	—	U only  U/E U only
	47 SC41957-012	Caution Label	
	48 SC44026-001	Washer	
	49 SC41252-001	Caution Label	
	50 SC43948-001	Caution Label	
	51 LPSP3006Z	Screw	M3 × 6

## SECTION 6 CHARTS AND DIAGRAMS

### ■ SCHEMATIC DIAGRAM NOTES

#### ● Schematic safety precaution

Parts are safety related appts.

When replacing them, be sure to use the specified parts.

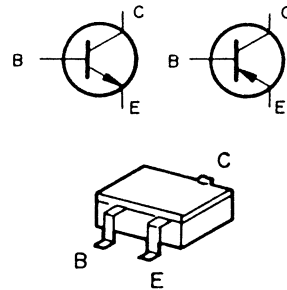
Voltage and waveform measurements.

Voltage: Measured with digital voltmeter in DC range;  
iris closed.

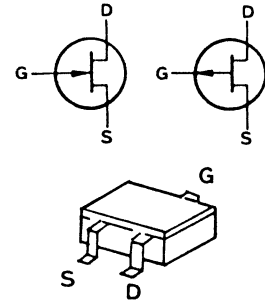
Waveform: Grey scale illuminated at more than 4000 lux  
at 3200 K lighting.

#### ● Chip transistors and FETs

##### Transistors

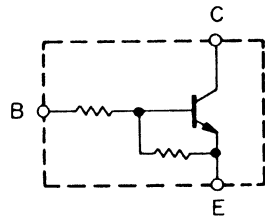


##### FETs



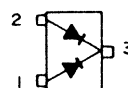
#### ● Digital Transistor

##### DTC124K

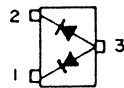


#### ● Chip diodes

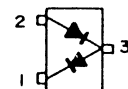
##### MA152WK



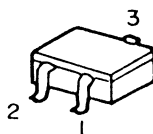
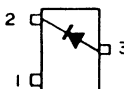
##### MA152WA



##### MA153



##### MA152A



### ■ REPLACING SUBMINIATURE "CHIP" PARTS

#### PARTS

- Some resistors, shoring jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.

#### Soldering cautions:

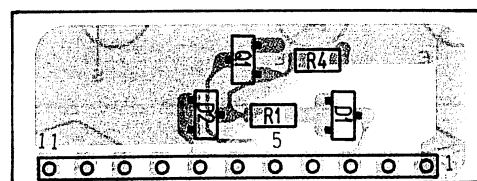
- Do not apply heat for more than 3 seconds.
- Avoid using a rubbing stroke when soldering.
- Discard removed chips; do not reuse them.
- Supplementary cementing is not required.
- Use care not to scratch or otherwise damage the chips.

- Resistors and capacitors are not interchangeable with chip parts which is used in the color cameras BY-110, KY-210, etc., because of size difference. In case of part order, refer to the section "ELECTRICAL PARTS LIST".

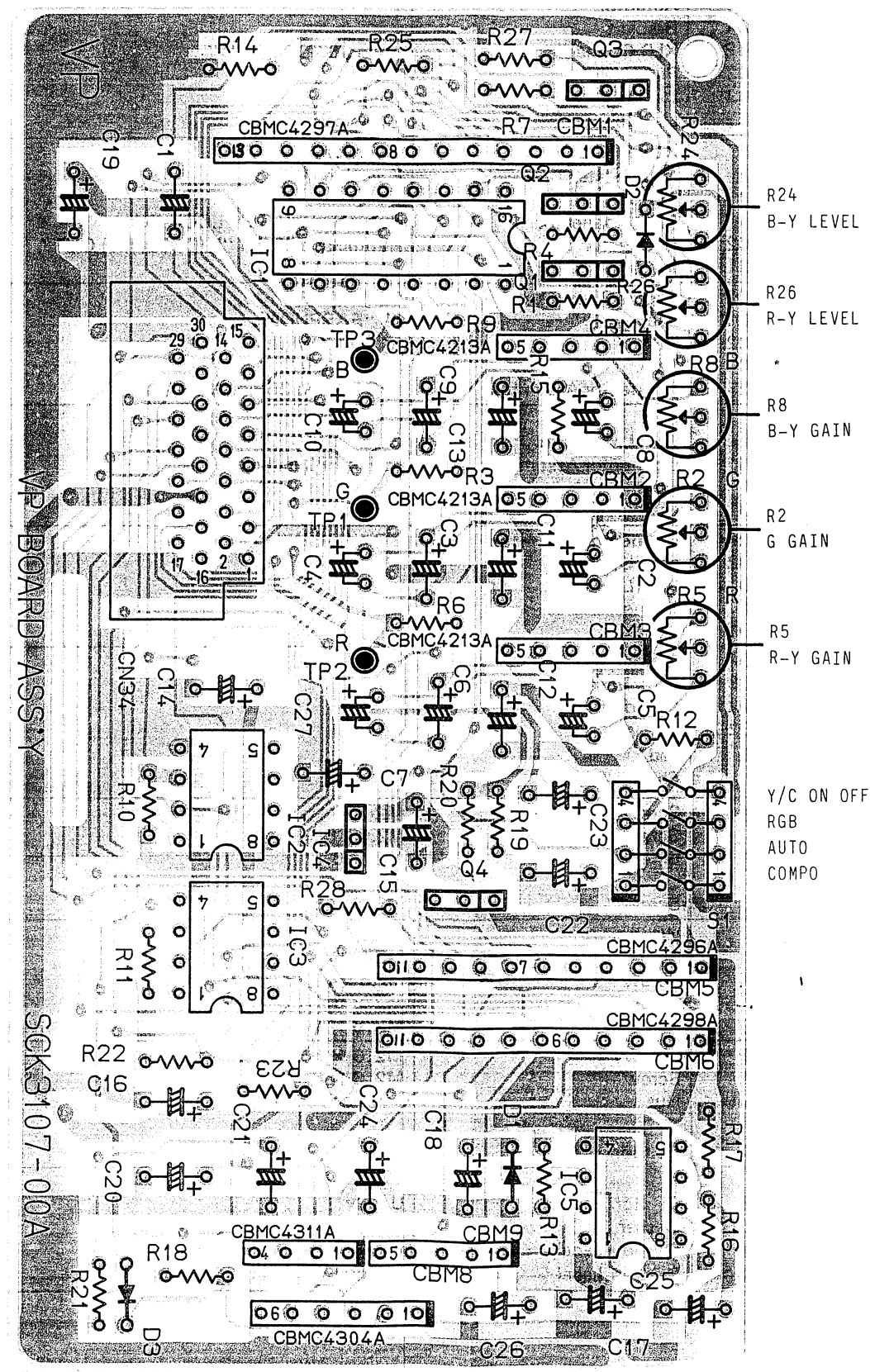
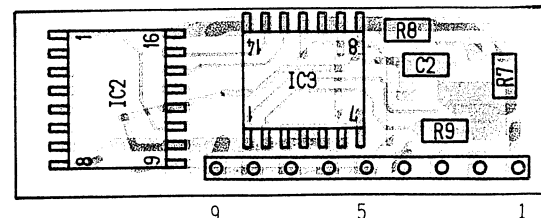


— VP board —

— VP board —



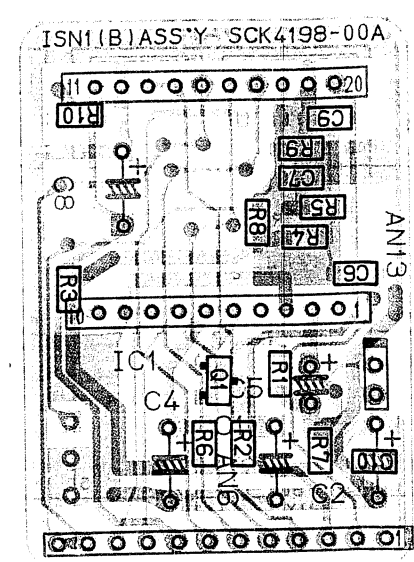
CBMC4304-00A  
VIDEO AMP & DETECT



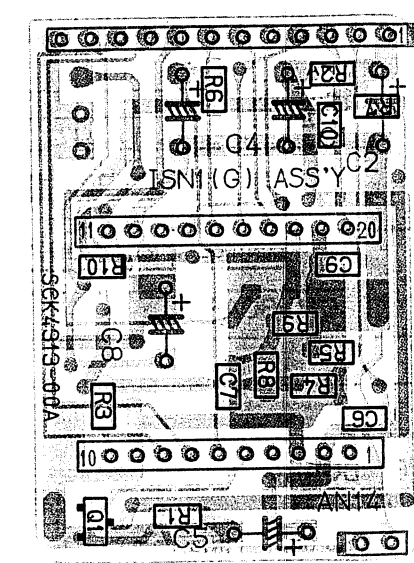


## 6.2 IS CIRCUIT BOARD

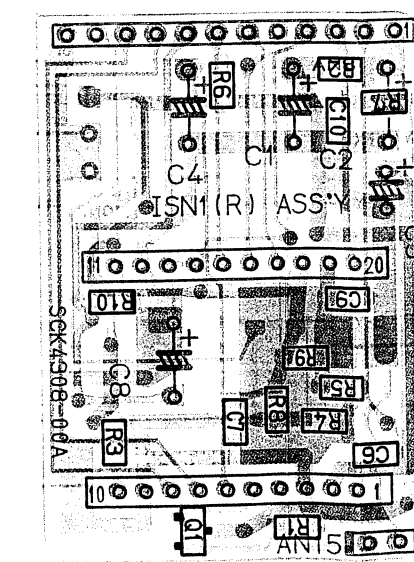
### 6.2.1 ISB board



### 6.2.2 ISG board



### 6.2.3 ISR board



1

2

3

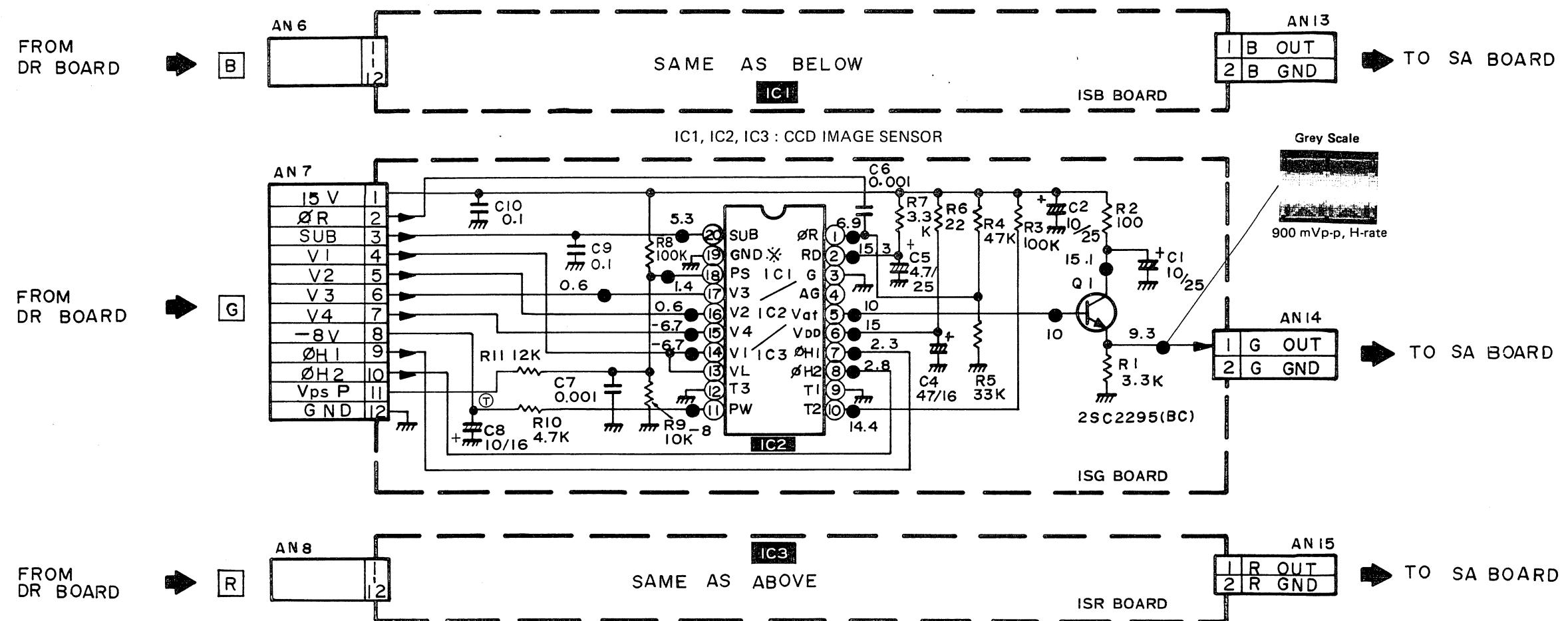
4

5

6



# 6.3 IS BOARD SCHEMATIC DIAGRAM



\* IC1 : CCD for B-ch  
 IC2 : CCD for G-ch  
 IC3 : CCD for R-ch

UPD3540D(NTSC)  
 UPD3545D(PAL)



IS	SA	A	B	C	D
----	----	---	---	---	---

6.4 SA CIRCUIT BOARD

1

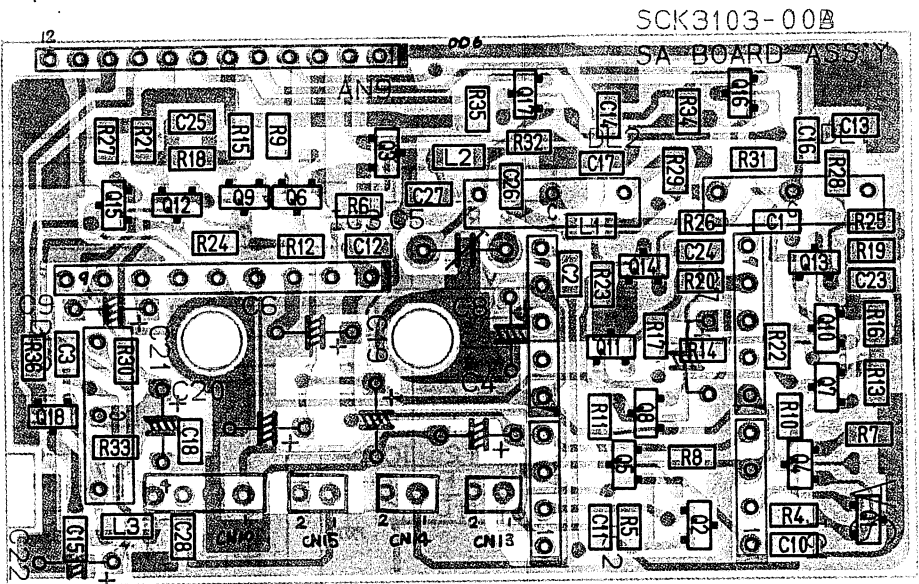
2

3

4

5

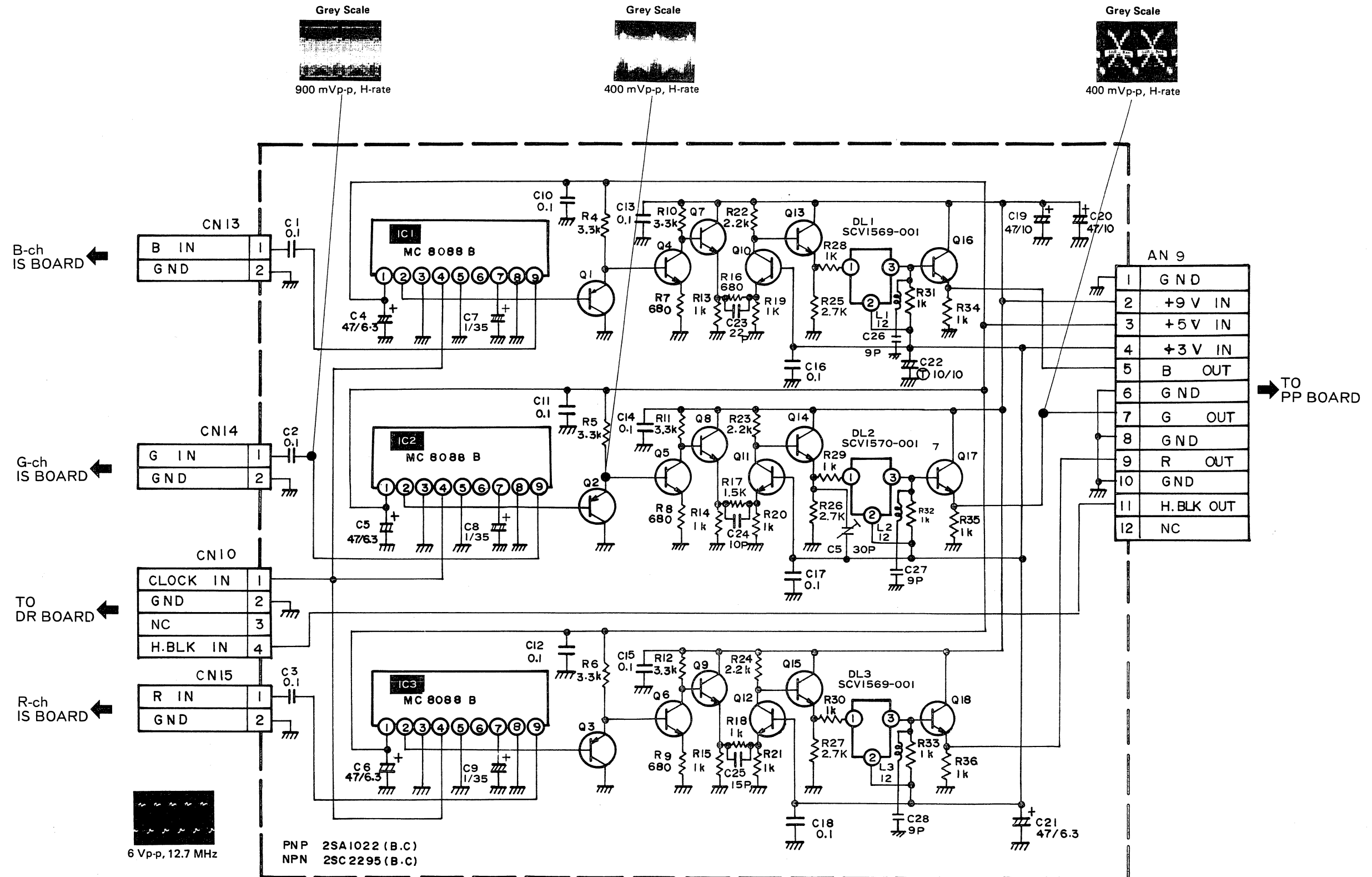
6



6-5 SA BOARD  
(IS SCHEMATIC)

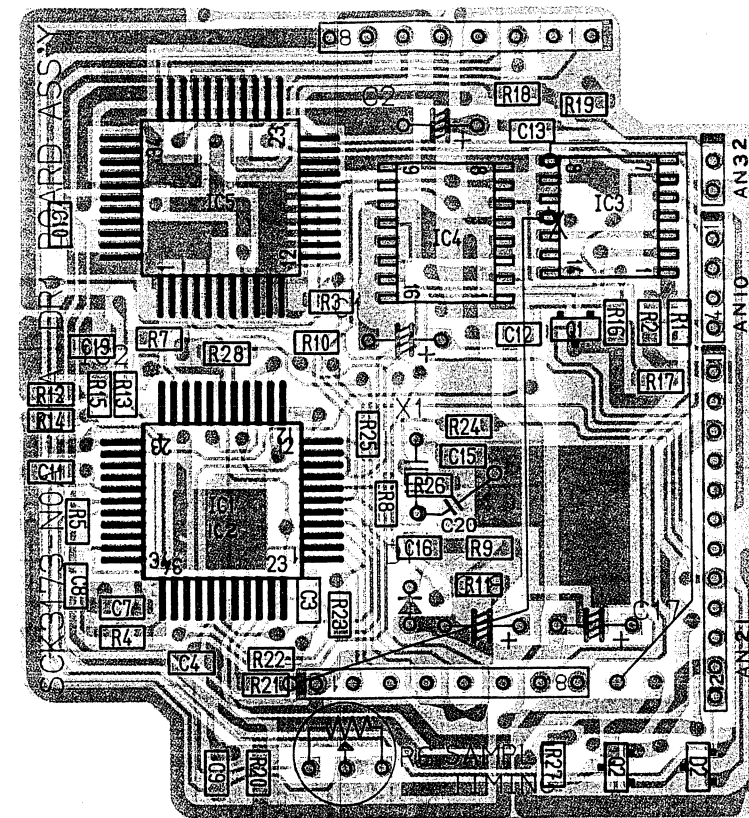


# 6.5 SA BOARD SCHEMATIC DIAGRAM



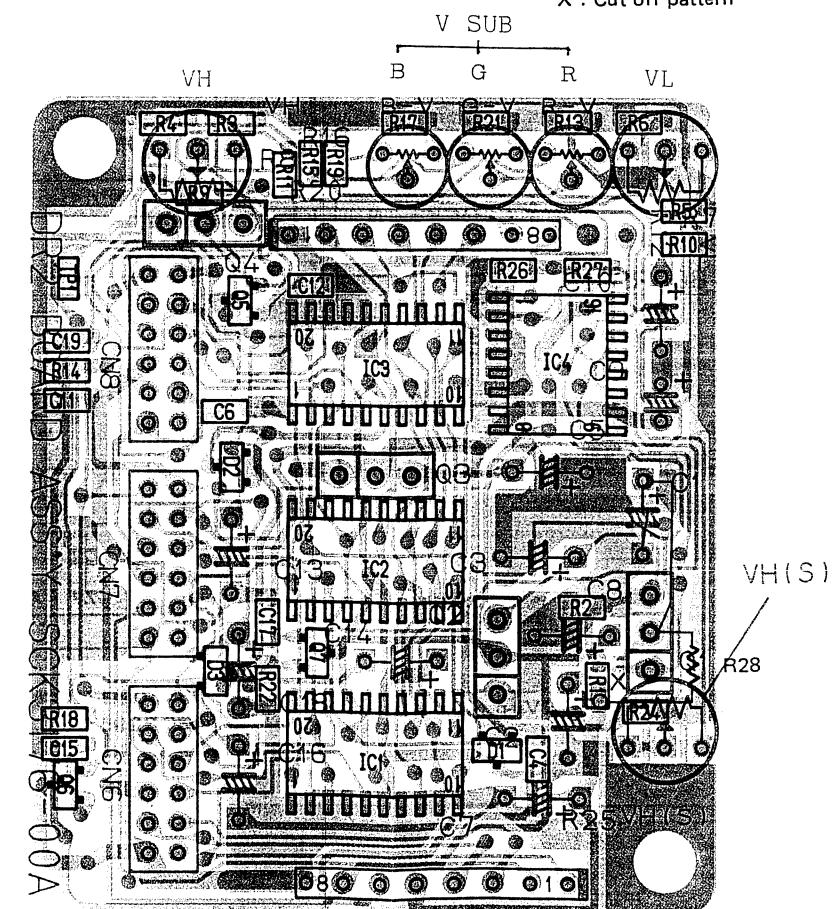


— DR1 board —



X : Cut off pattern

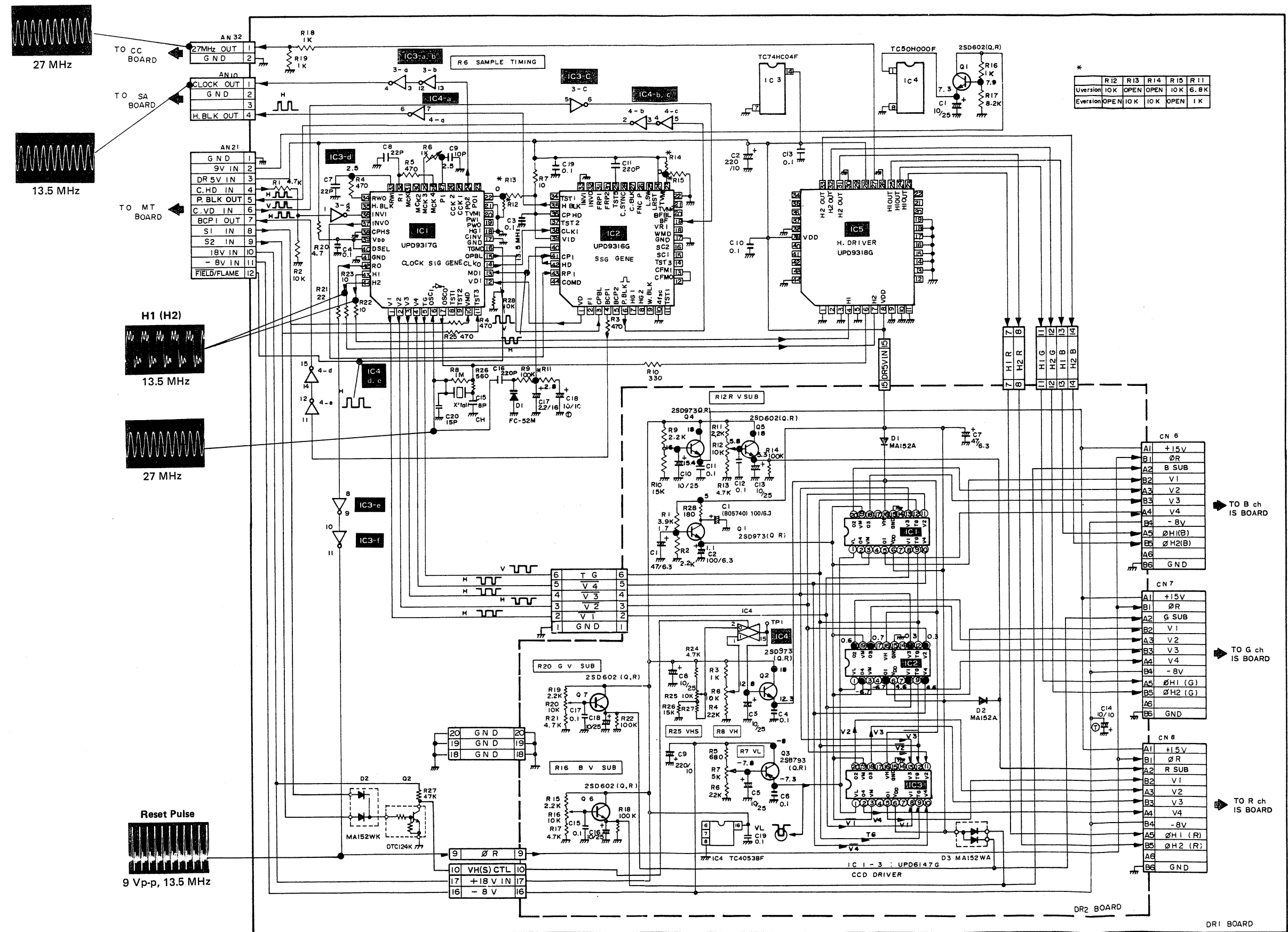
– DR2 board –



X : Cut off patterm



# 6.7 DR1/DR2 BOARD SCHEMATIC DIAGRAM

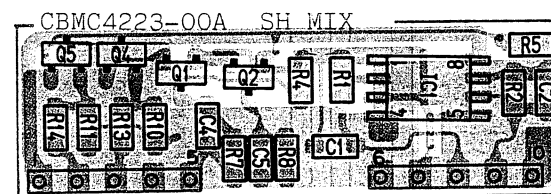
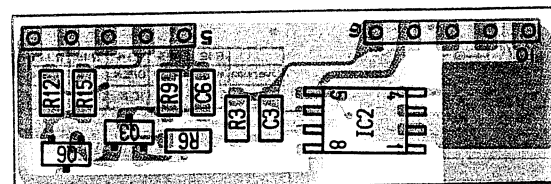


Revised on May, 1991.

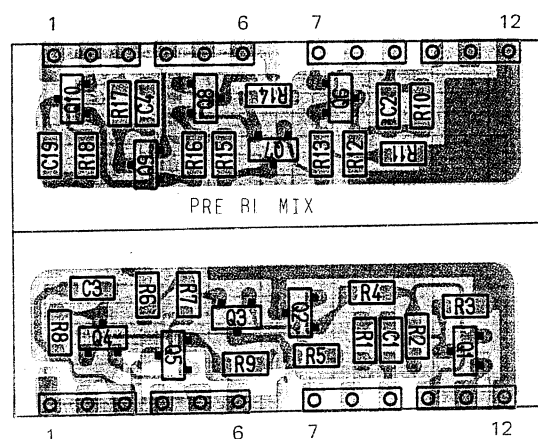


A vertical scale with numbers 1 through 6. Horizontal tick marks are positioned to the left of each number. The scale is oriented vertically, with 1 at the top and 6 at the bottom.

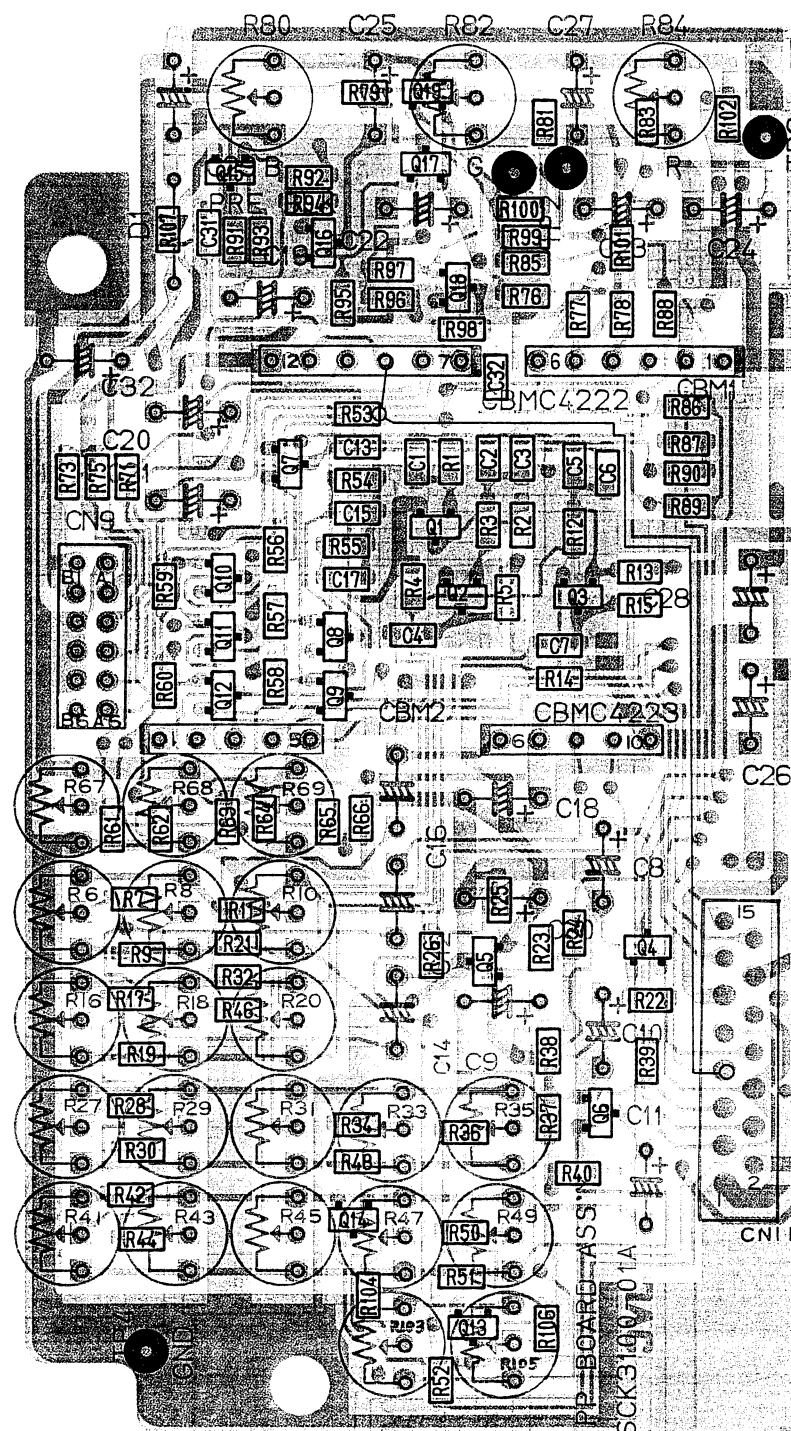
– SH MIX board (CBM2) [CBMC4223-00A] –



— PRE BL MIX board (CBM1) [CBMC4222-00A] —



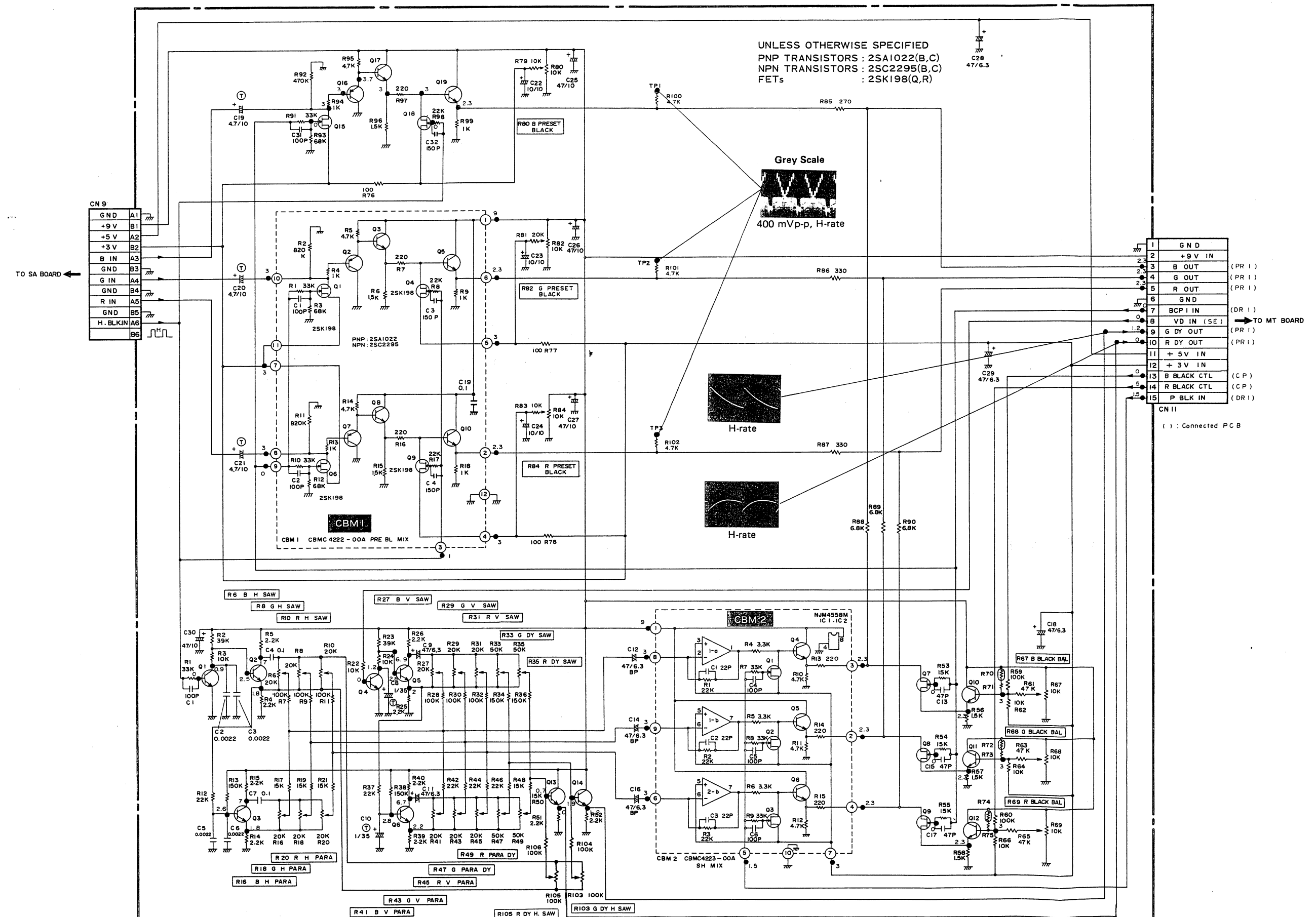
— P. P board —



94



# 6.9 P. P BOARD SCHEMATIC DIAGRAM

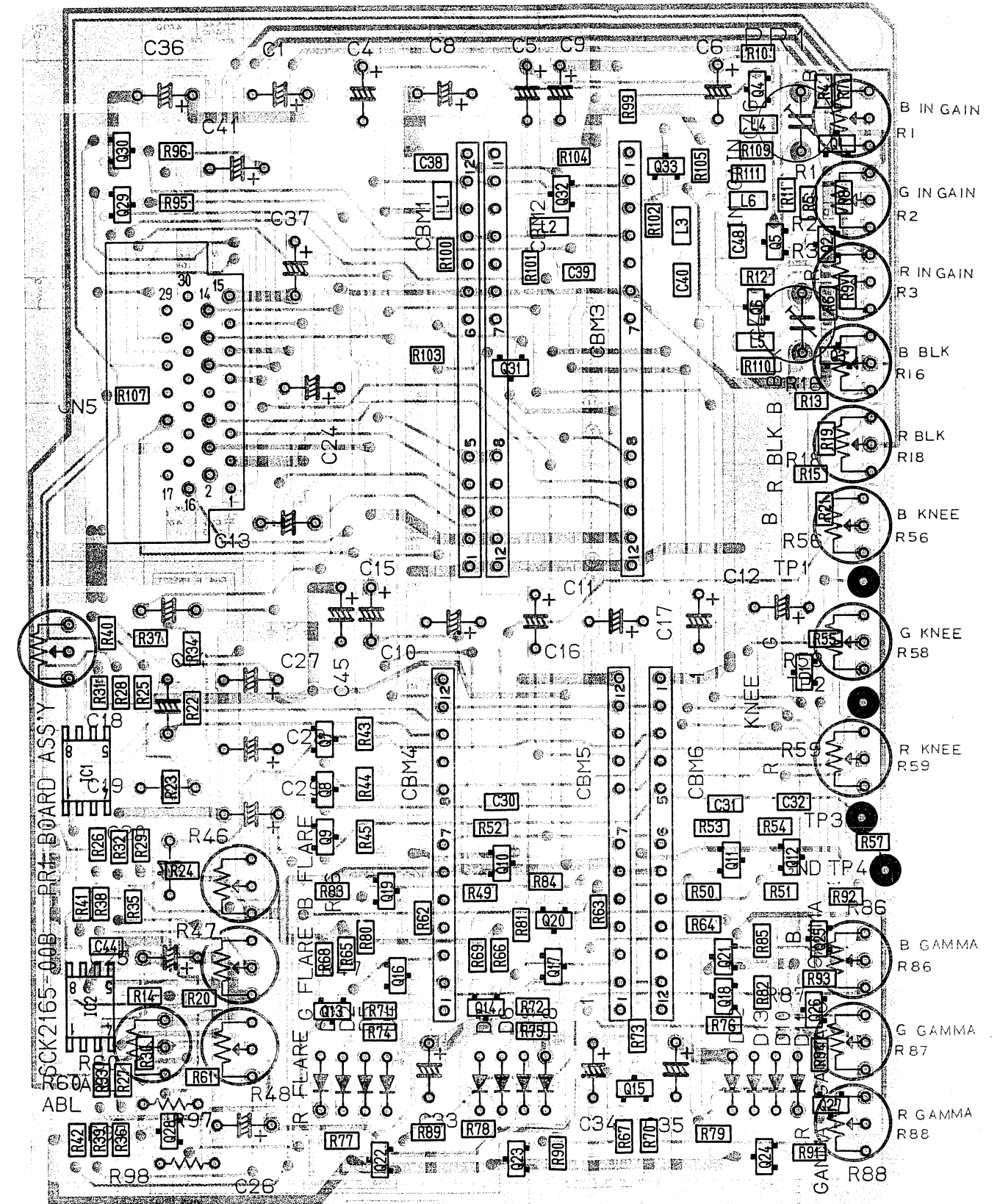




— PR1 board —

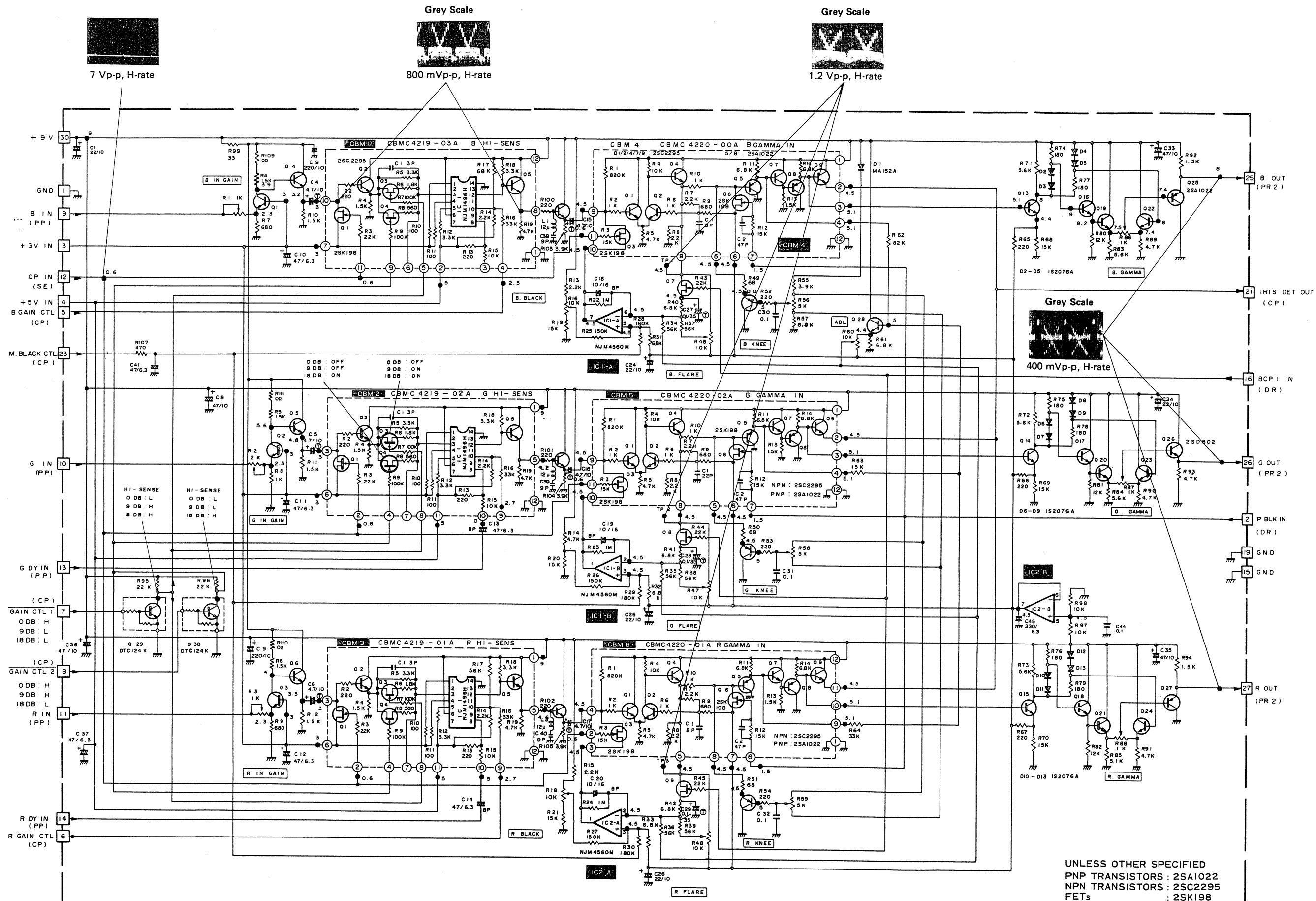
- 

- 





# 6.11 PR1 BOARD SCHEMATIC DIAGRAM



Revised on Aug. 1989.

( ) : CONNECTED PCB

PR1 SCHEMATIC  
(PR2 BOARDS)

6-12

6-12

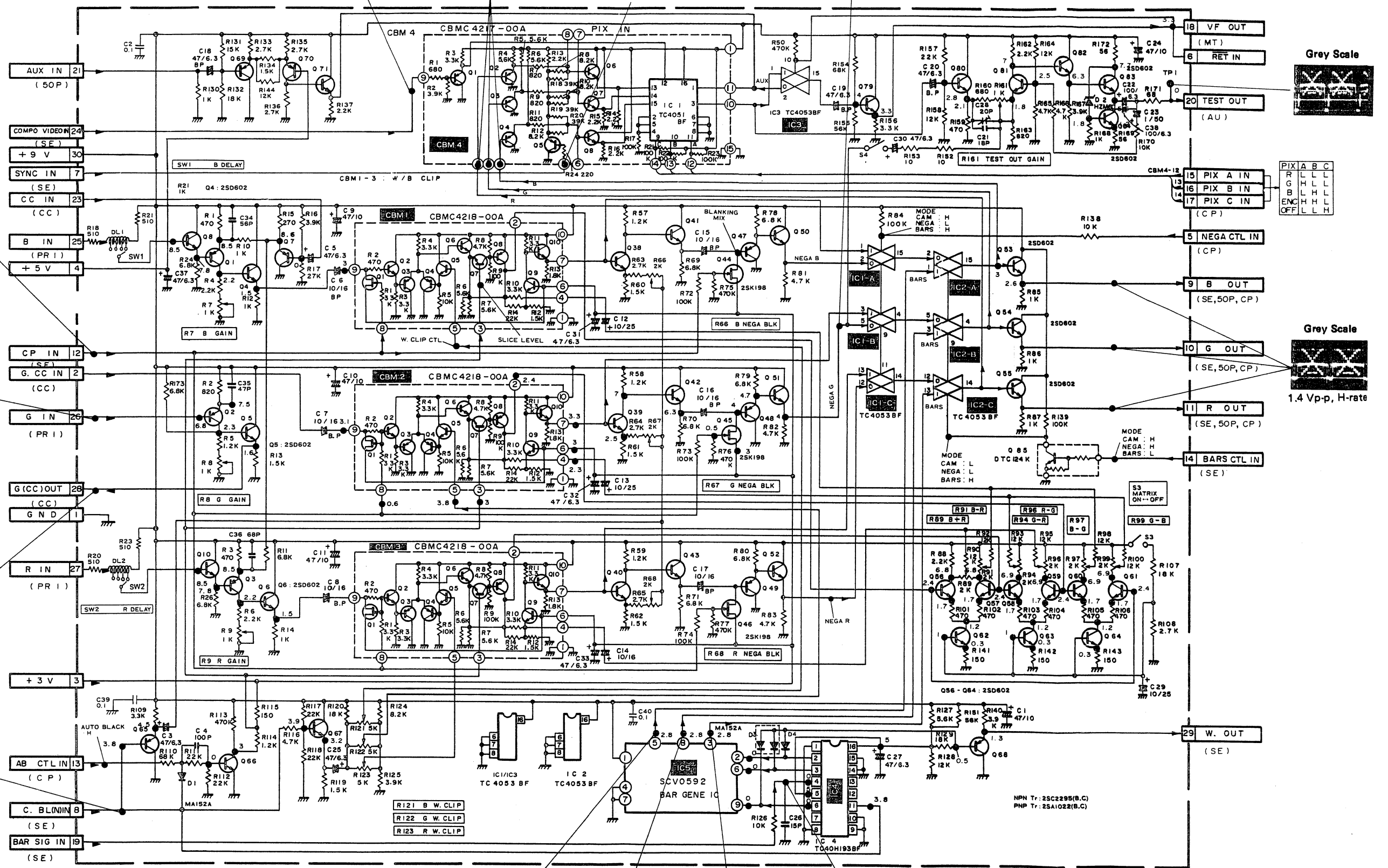
PR1 SCHEMATIC  
(PR2 BOARDS)







# 6.13 PR2 BOARD SCHEMATIC DIAGRAM



Revised on Aug. 1989.

( ) : CONNECTED PCB



PR2 SCHEMATIC (CC BOARDS)

6-14

6-14

PR2 SCHEMATIC (CC BOARDS)

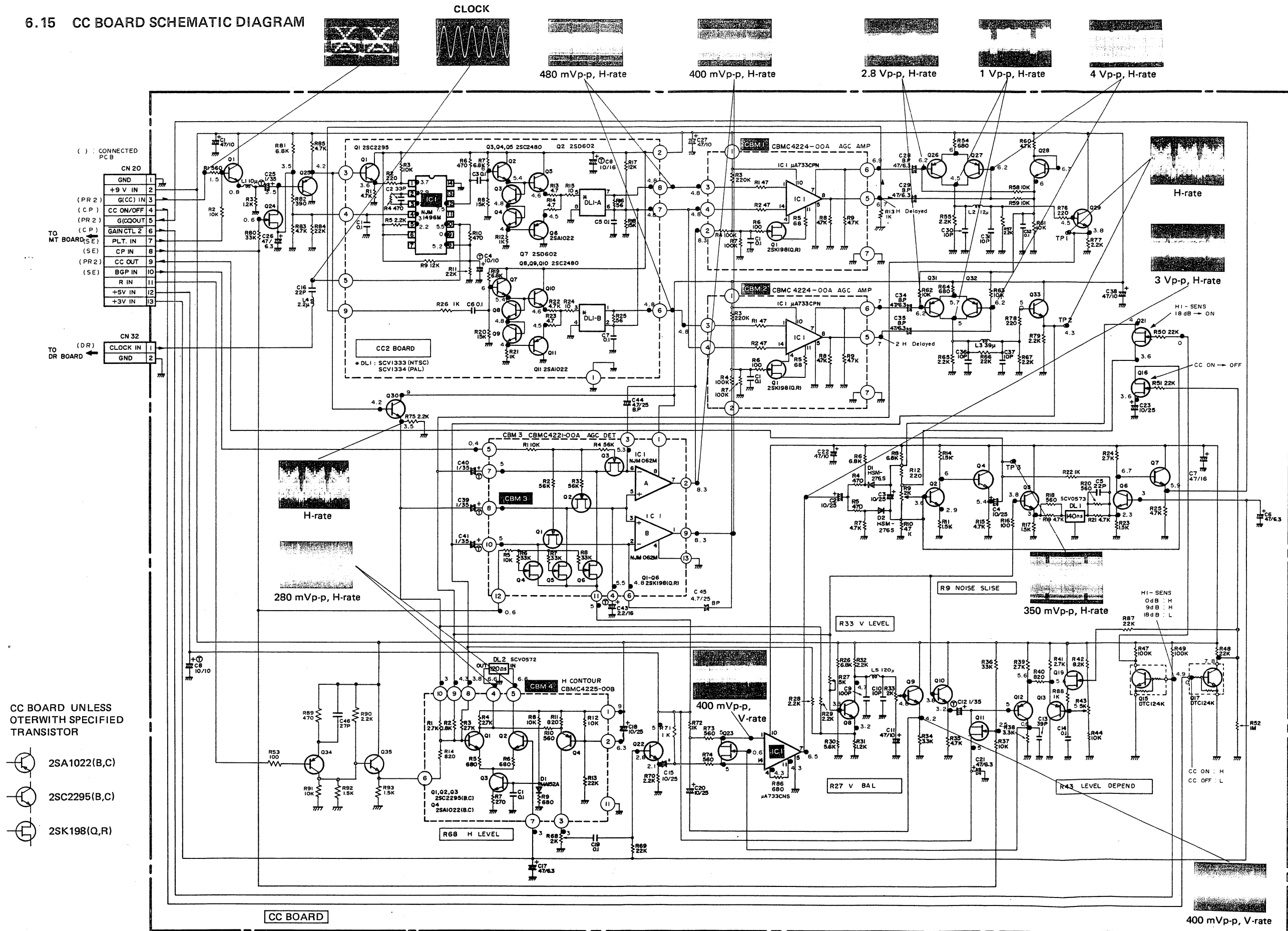
6-14







# 6.15 CC BOARD SCHEMATIC DIAGRAM

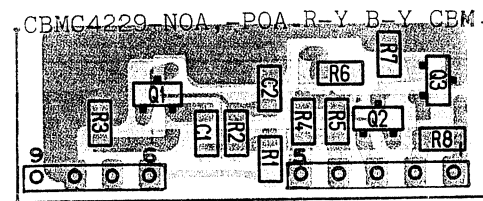


Revised on Aug. 1989.

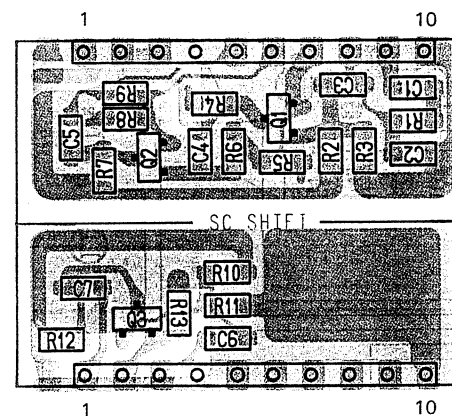


— SE-N board —

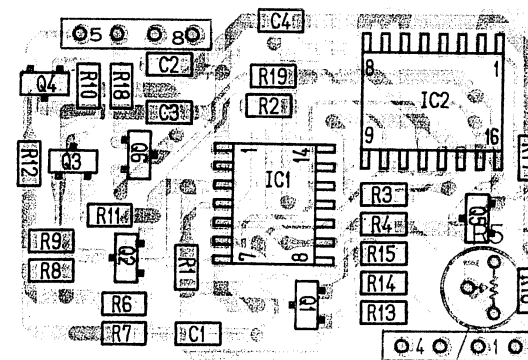
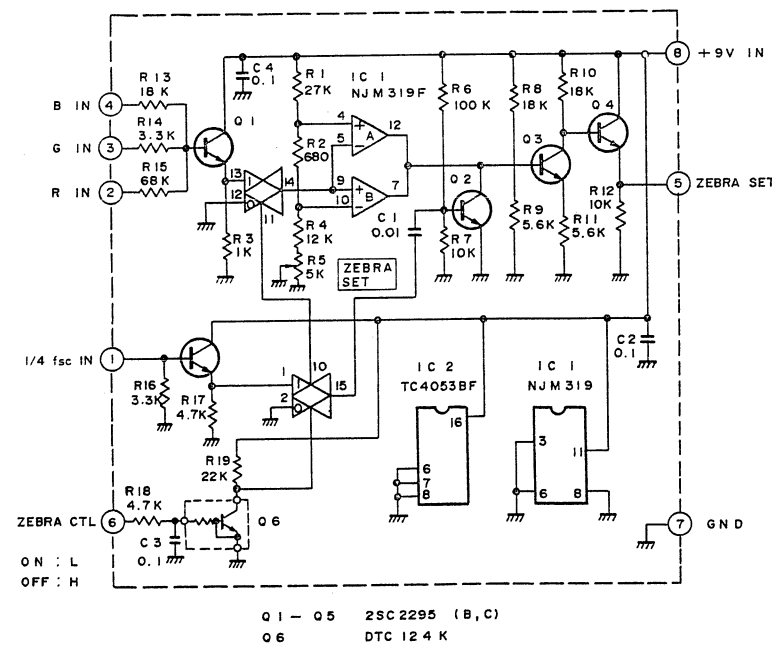
- R-Y board (CBM1) [CBMC4299-N0A] —
- B-Y board (CBM2) [CBMC4299-N1A] —



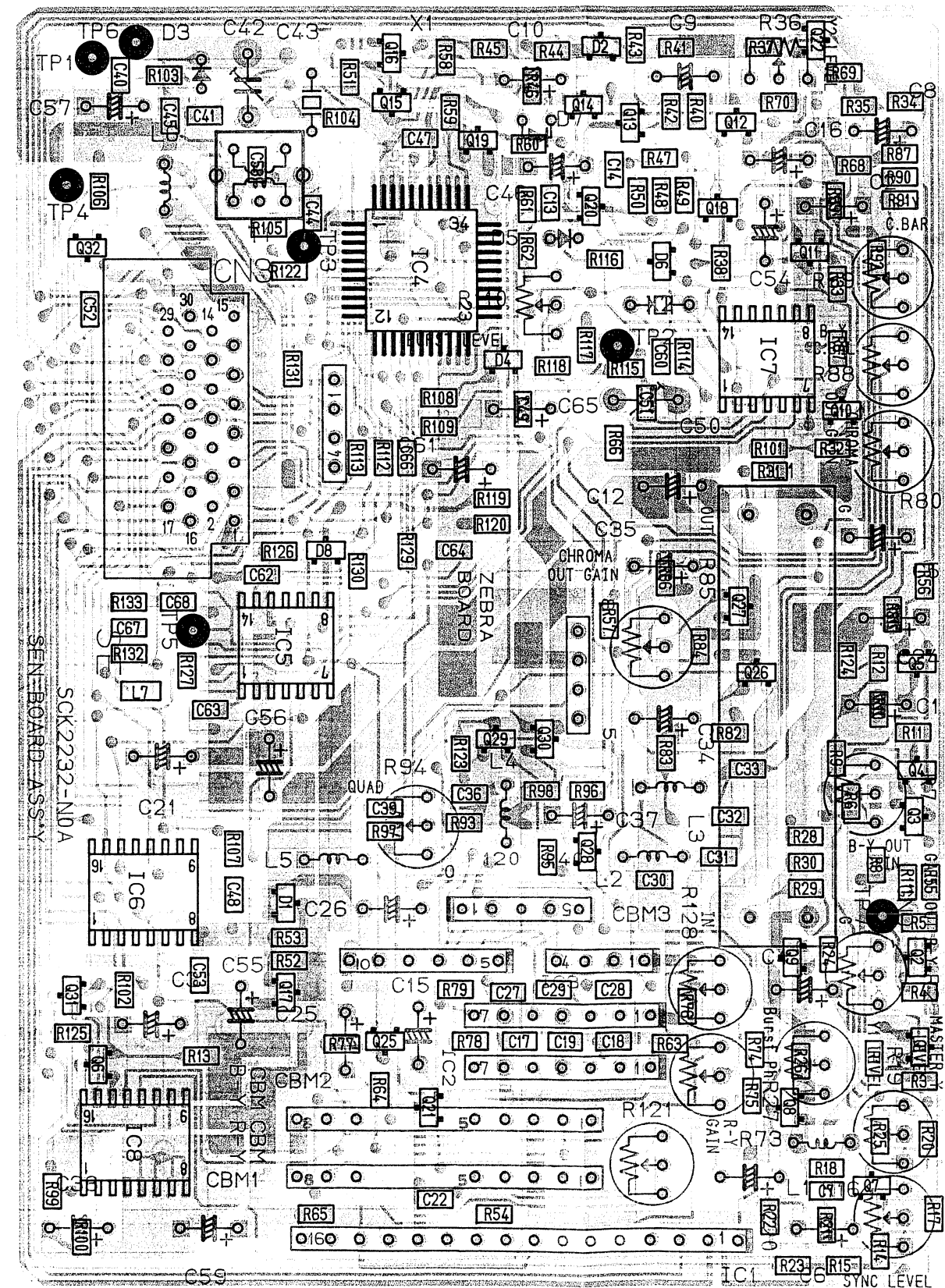
— SC SHIFT board (CBM3) [CBMC4301-00A] —



— ZEBRA SUB board —



SC84476-001 ZEBRA/PWB  
ZEBRA SET





SE  
(NTSC)

SE  
(PAL)

E

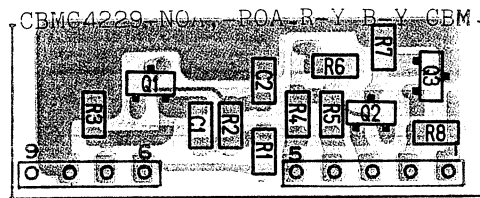
F

G

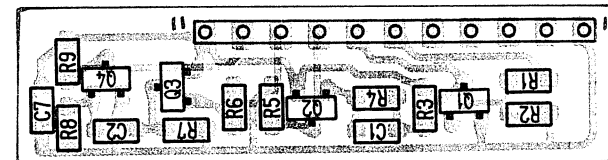
H

6.16-P SE CIRCUIT BOARDS (PAL)

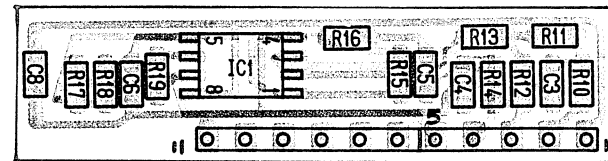
- R-Y board (CBM1) [CBMC4299-P0A] -
- B-Y board (CBM2) [CBMC4299-P1A] -



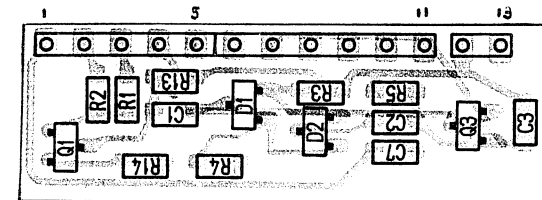
- OFFSET board (CBM3) [CBMC4215-00A] -



CBMC4215-00A OFFSET

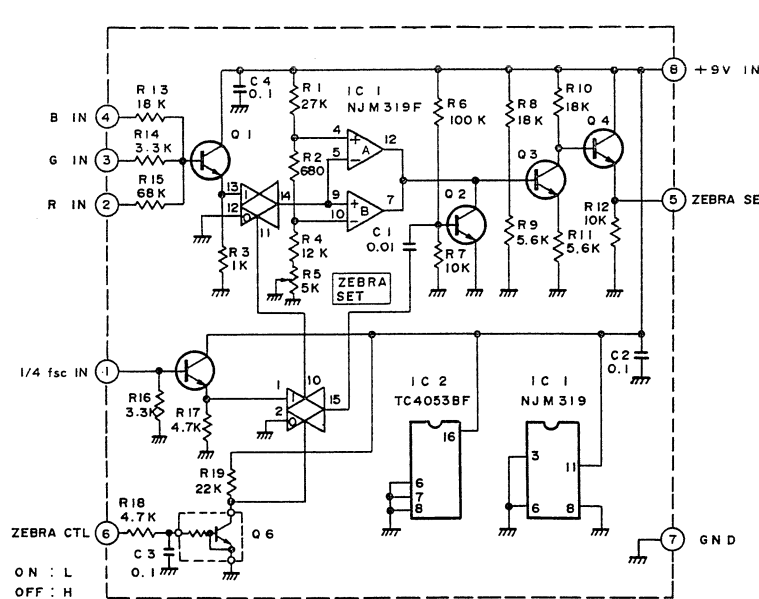


- LIMITER board (CBM4) [CBMC4216-00A] -

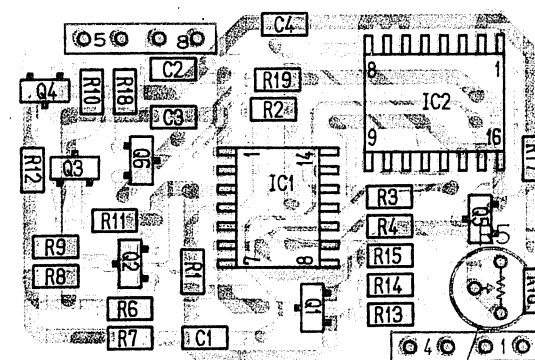


CBMC4216-00A LIMITER

- ZEBRA SUB board -



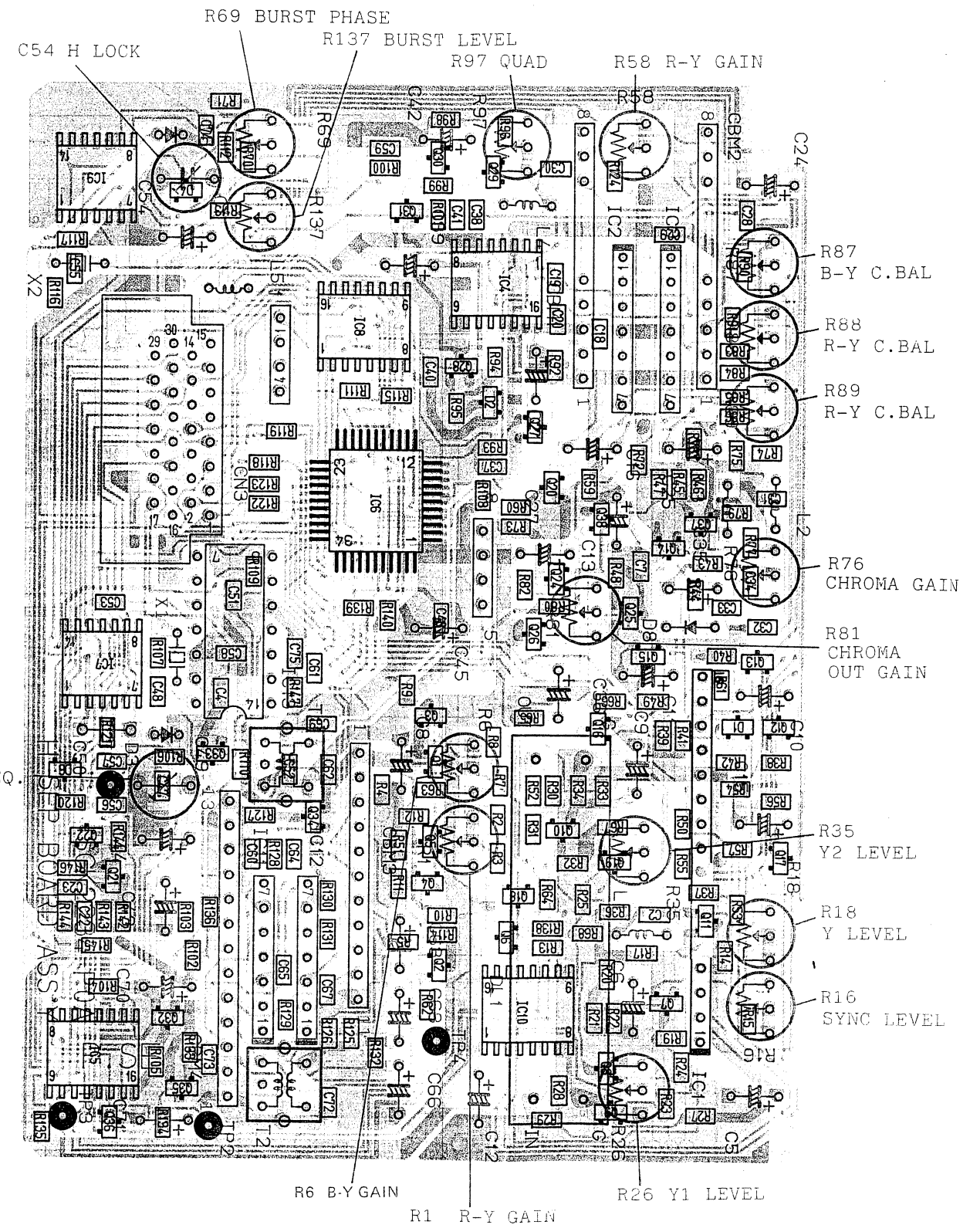
Q1 - Q5 2SC2295 (B,C)  
Q6 DTC124K



SC84476-001 ZEBRA PWB  
ZEBRA SET

SE(P) BOARDS  
(SE(N) SCHEMATIC) 6-17-P

- SE-P board -

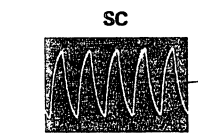


6-17-P SE(P) BOARDS  
(SE(N) SCHEMATIC)



**BARS ON**

2 Vp-p, H-rate



6-18-N SE(N) SCHEMATIC  
(SE(P) BOARDS)



# 6.17-P SE (PAL) BOARD SCHEMATIC DIAGRAM

**BARS ON**  
2 Vp-p, H-rate  
(No termination)

**BARS ON**  
1 Vp-p, H-rate

**BARS ON**  
1 Vp-p, H-rate

**BARS ON**  
1 Vp-p, H-rate

UNLESS OTHERWISE SPECIFIED  
NPN TRANSISTORS

• = 2SA1022

PNP TRANSISTORS

• = 2SC2295

**Modulated B-Y**  
1.5 Vp-p, H-rate

**Modulated R-Y**  
0.9 Vp-p, H-rate

SE(P) SCHEMATIC  
(CP BOARDS) 6-18-P

SE(P) SCHEMATIC  
(CP BOARDS) 6-18-P

**PAL PULSE**  
8 Vp-p, H-rate

**Modulated R-Y**  
2.3 Vp-p, H-rate

**BARS ON**  
1 Vp-p, H-rate

**Y**  
1 Vp-p, H-rate

**R-Y**  
2 Vp-p, H-rate

**B-Y**  
0.7 Vp-p, H-rate

250 mVp-p, H-rate

CBM4 PIN 11  
8 Vp-  
SYNC OUT  
5 Vp-

H-rate

**BGP OUT**  
7 Vp-p, V-rate

**SAMPLE P. OUT**  
7 Vp-p, V-rate

**SC OUT**  
600 mVp-p, 200 nsec/div.

H-rate

6 Vp-p

12 CP OUT

14 BAR/CAM IN

BARS ON=L

BARS OFF=H(5V)

Y/C ON=L

Y/C OFF=H

Y/C ON=L

Y/C OFF=H



A

B

C

SE  
(PAL)

CP

E

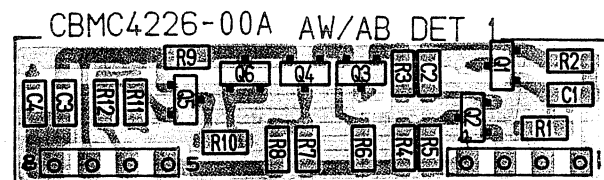
F

G

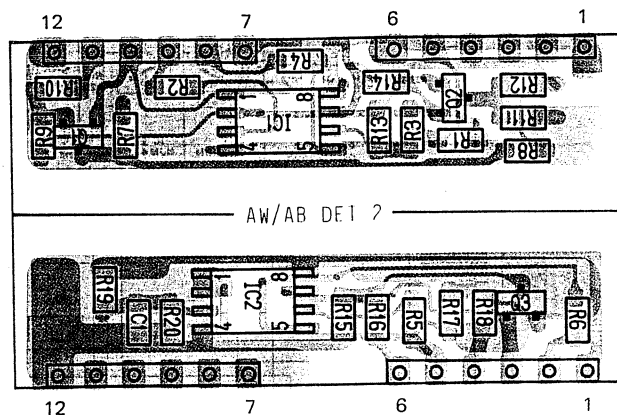
H

## 6.18 CP CIRCUIT BOARDS

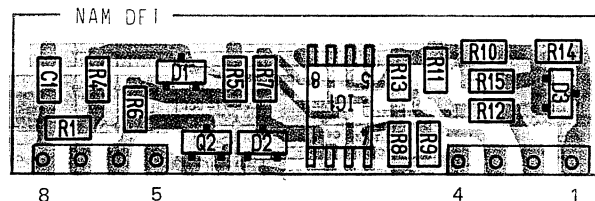
— AW/AB DET1 board (CBM1/CBM2/CBM3) [CBMC4226-00A] —



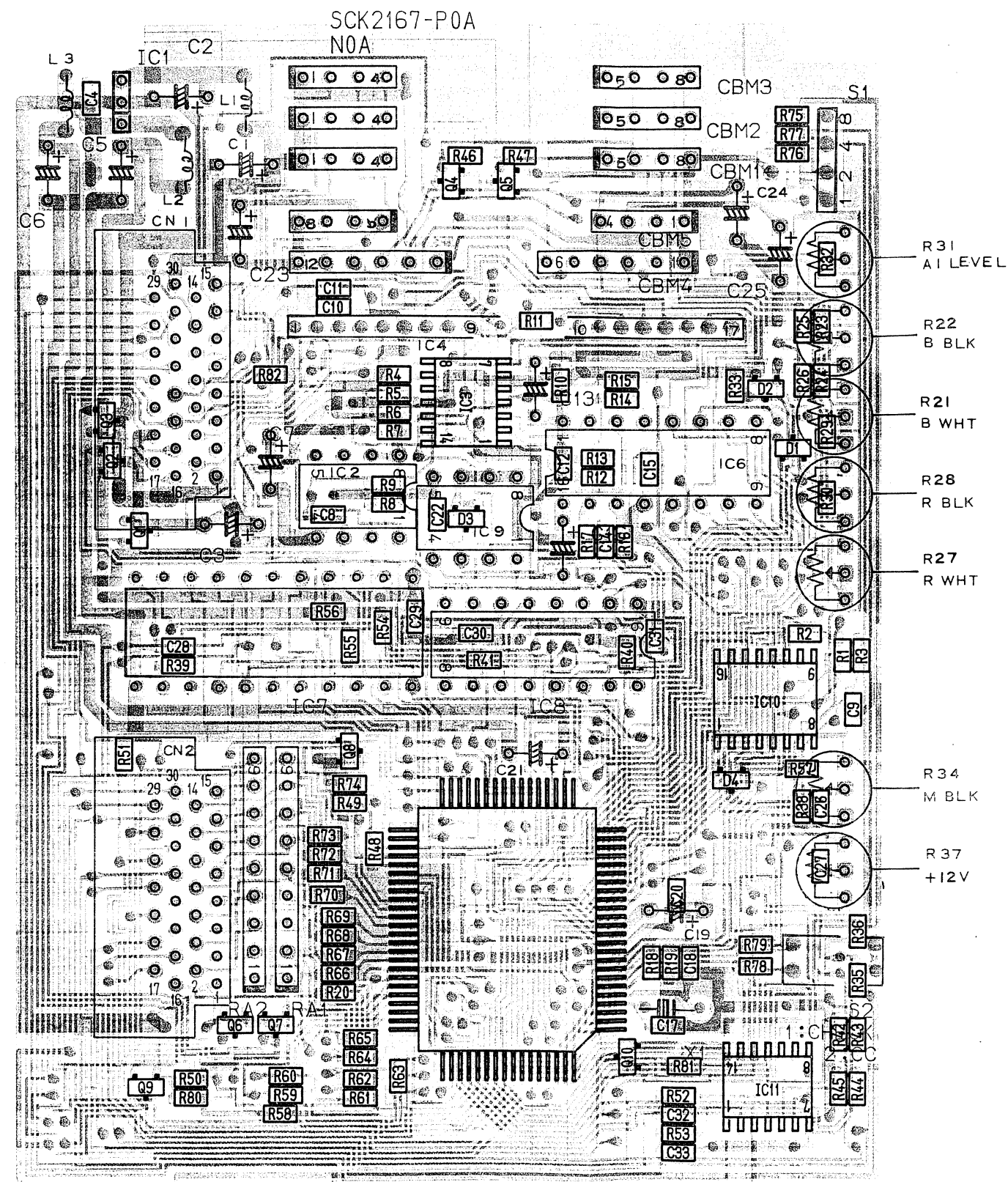
— AW/AB DET2 board (CBM4) [CBMC4306-00A] —



— NAM DET board (CBM5) [CBMC4303-00A] —

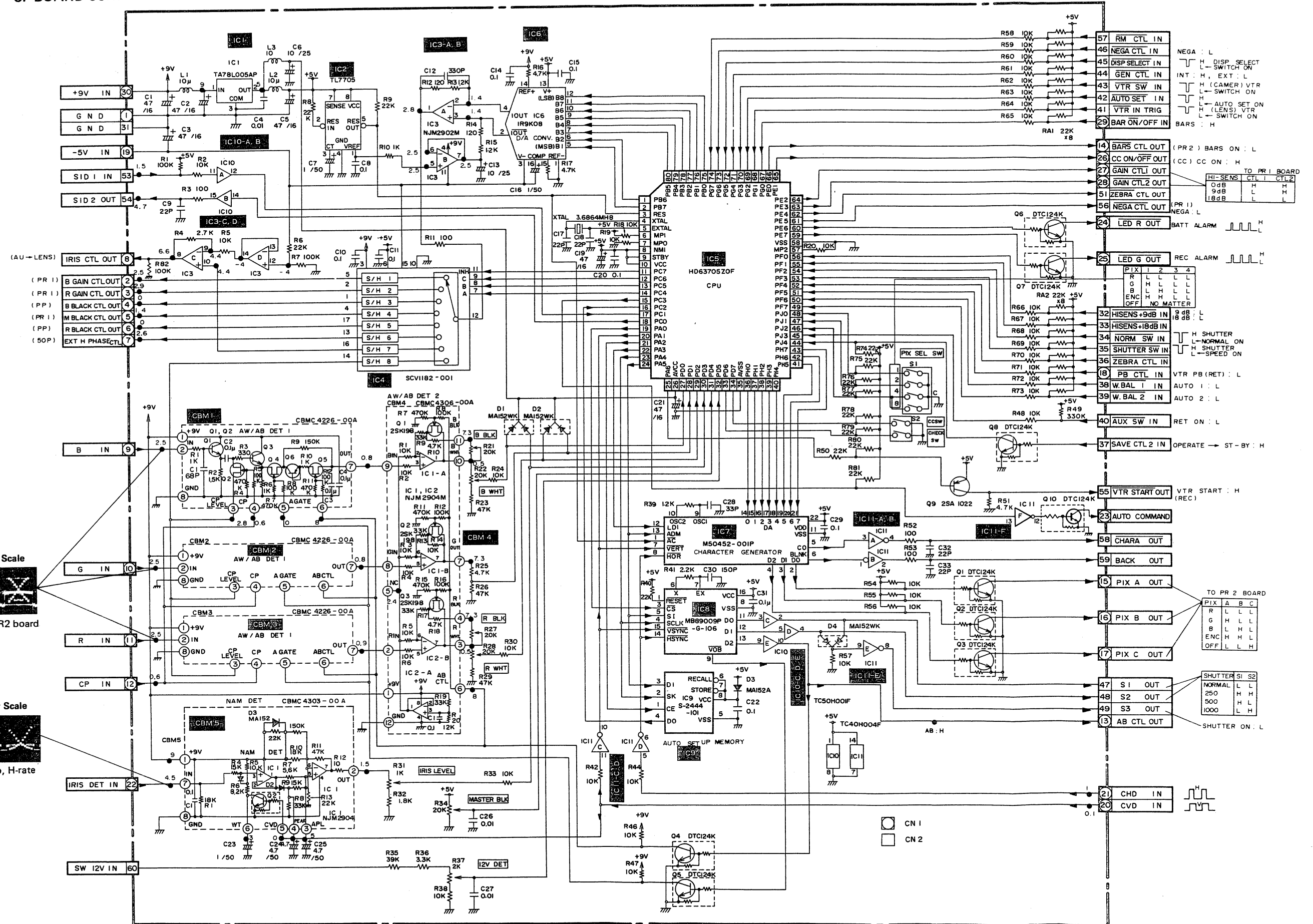


— CP board —





# 6.19 CP BOARD SCHEMATIC DIAGRAM



Revised on Aug. 1989.

CP SCHEMATIC  
(AU/SW BOARDS)

6-20

CP SCHEMATIC  
(AU/SW BOARDS)

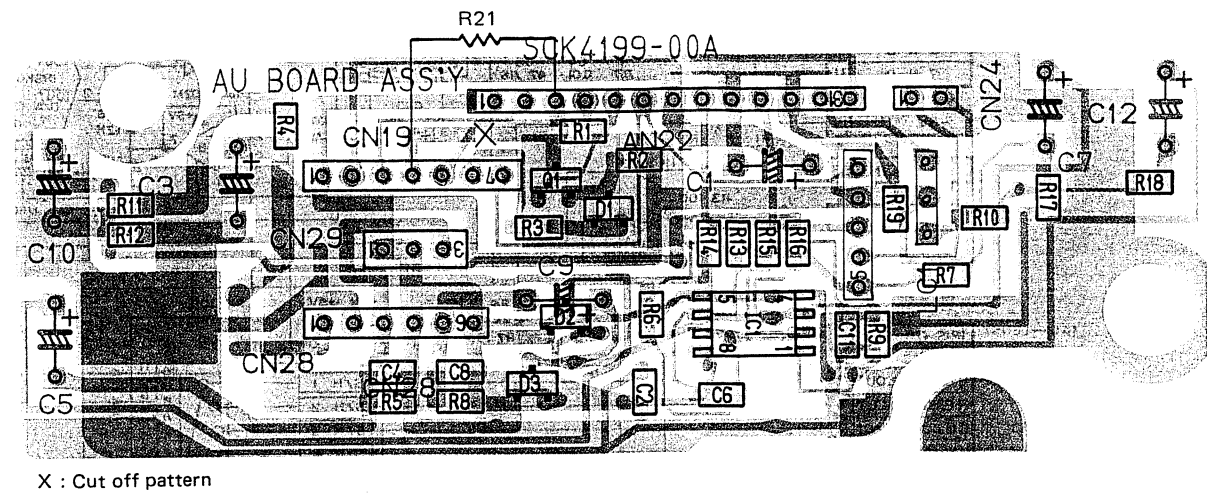
6-20



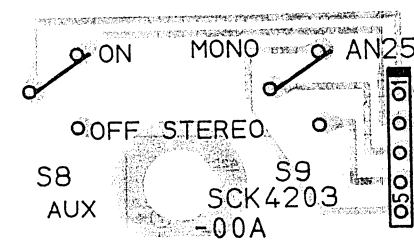
CP	AU SW4	A	B	C	D
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6.20 AU/SW4 CIRCUIT BOARDS

— AU board —

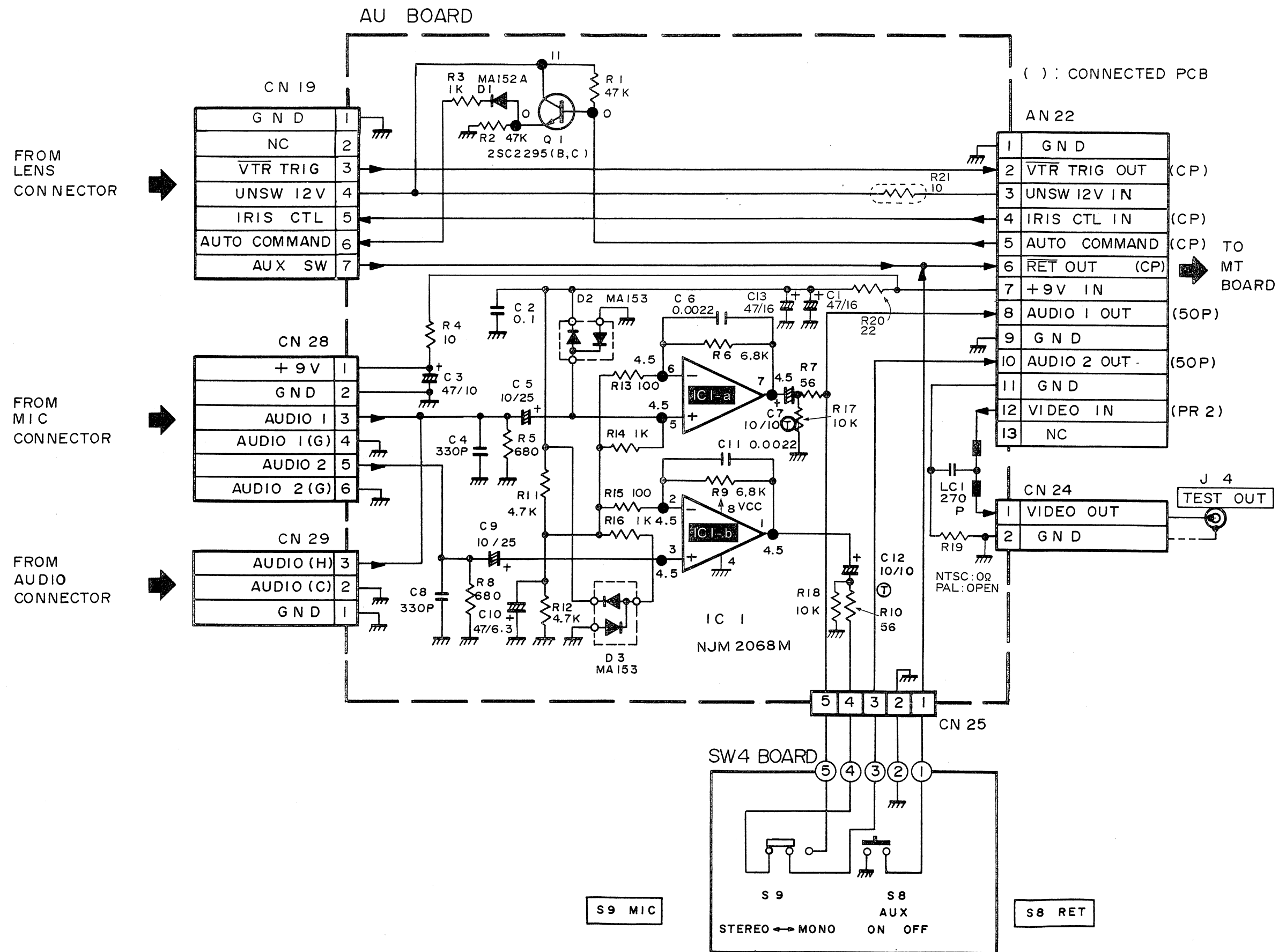


— SW4 board —



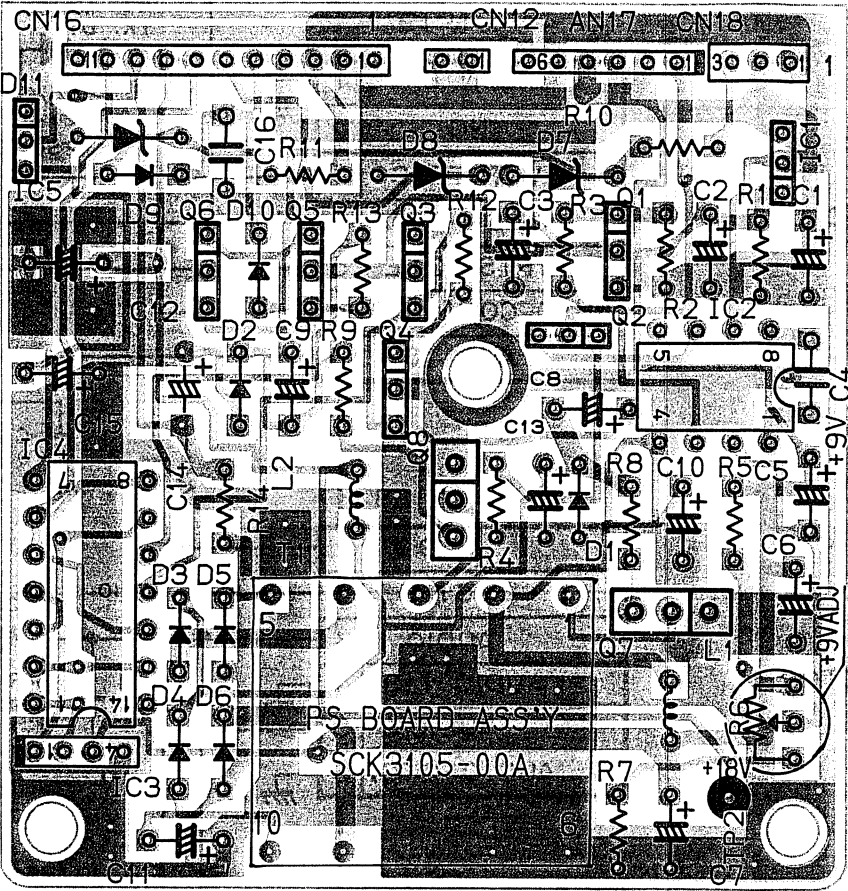


# 6.21 AU/SW4 BOARDS SCHEMATIC DIAGRAM



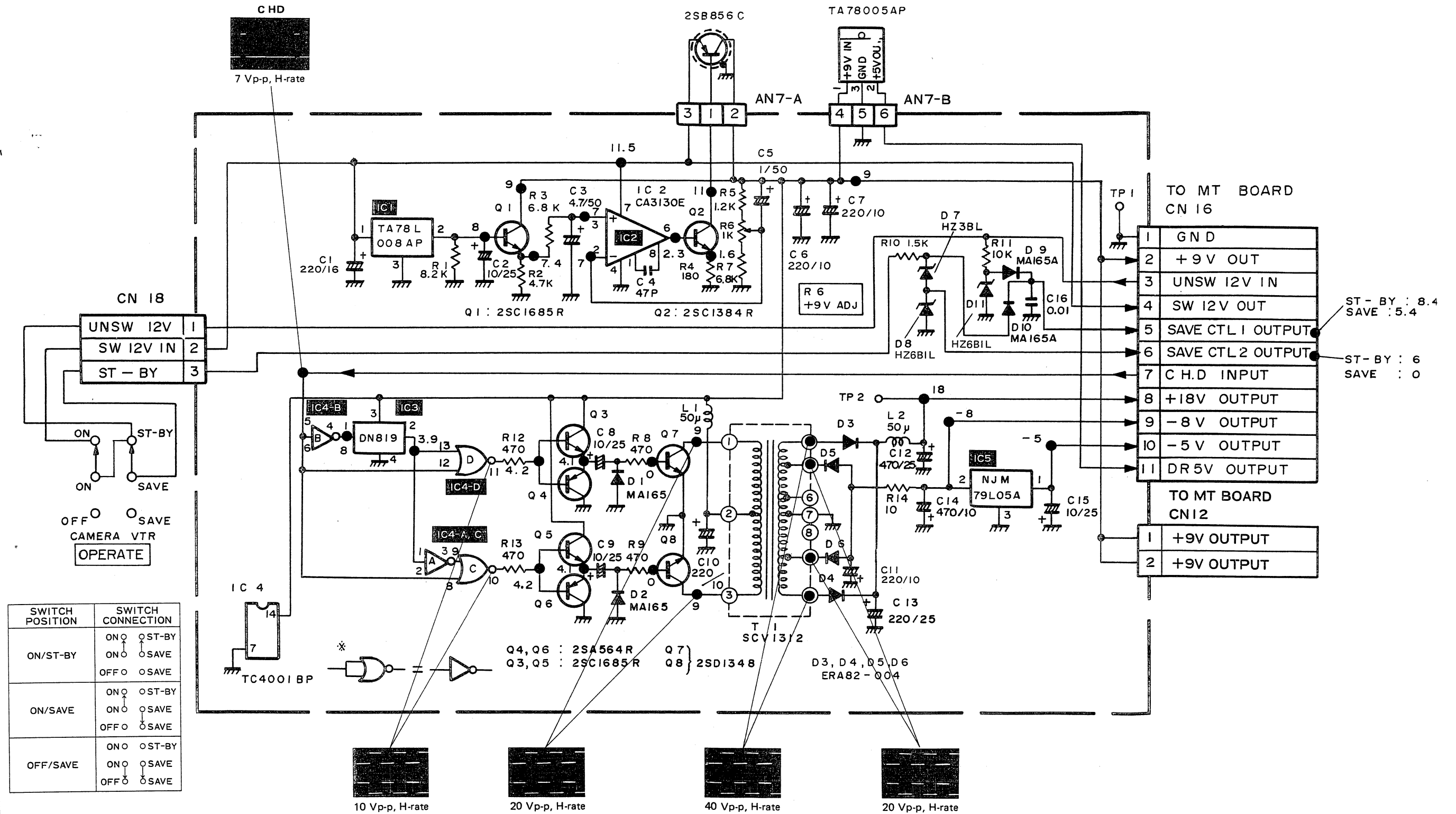


6.22 PS CIRCUIT BOARD



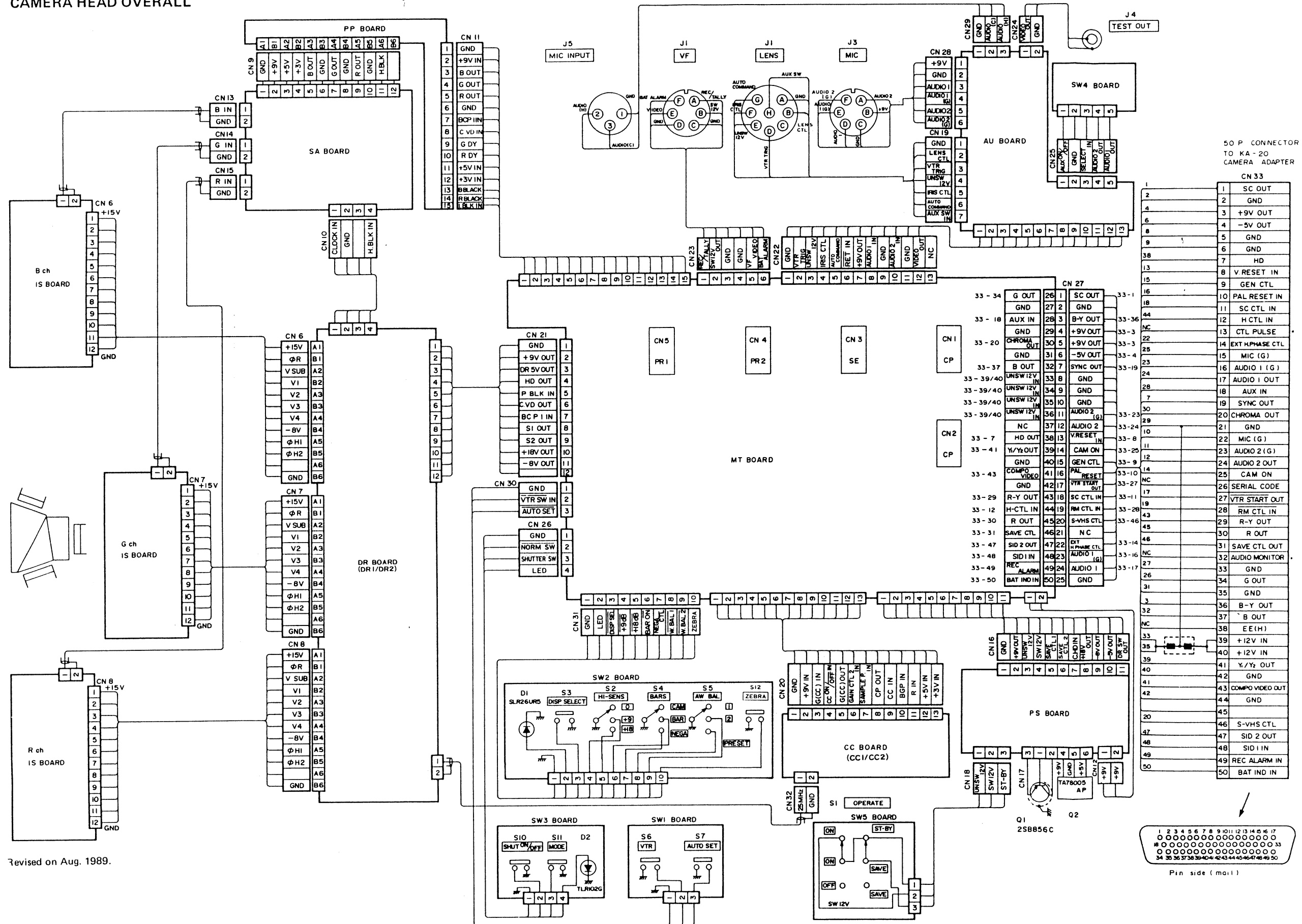


# 6.23 PS BOARD SCHEMATIC DIAGRAM





# 6.25 CAMERA HEAD OVERALL



Revised on Aug. 1989.

OVERALL (MT, SW BOARDS) 6-26

OVERALL (MT, SW BOARDS) 6-26

50 P. CONNECTOR TO KA-20 CAMERA ADAPTER

1	SC OUT
2	GND
3	+9V OUT
4	-5V OUT
5	GND
6	GND
7	HD
8	V RESET IN
9	GEN CTL
10	PAL RESET IN
11	SC CTL IN
12	H CTL IN
13	CTL PULSE
14	EXT HPHASE CTL
15	MIC (G)
16	AUDIO 1 (G)
17	AUDIO 1 OUT
18	AUX IN
19	SYNC OUT
20	CHROMA OUT
21	GND
22	MIC (G)
23	AUDIO 2 (G)
24	AUDIO 2 OUT
25	CAM ON
26	SERIAL CODE
27	VTR START OUT
28	RM CTL IN
29	R-Y OUT
30	R OUT
31	SAVE CTL OUT
32	AUDIO MONITOR
33	GND
34	G OUT
35	GND
36	B-Y OUT
37	B OUT
38	EE(H)
39	+12V IN
40	+12V IN
41	Y/Y2 OUT
42	GND
43	COMPO VIDEO OUT
44	GND
45	S-VHS CTL
46	SID 2 OUT
47	SID 1 IN
48	REC ALARM IN
49	BAT IND IN
50	BAT IND IN

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17  
 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33  
 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Pin side (mali)



A

B

C

OVERALL

MT

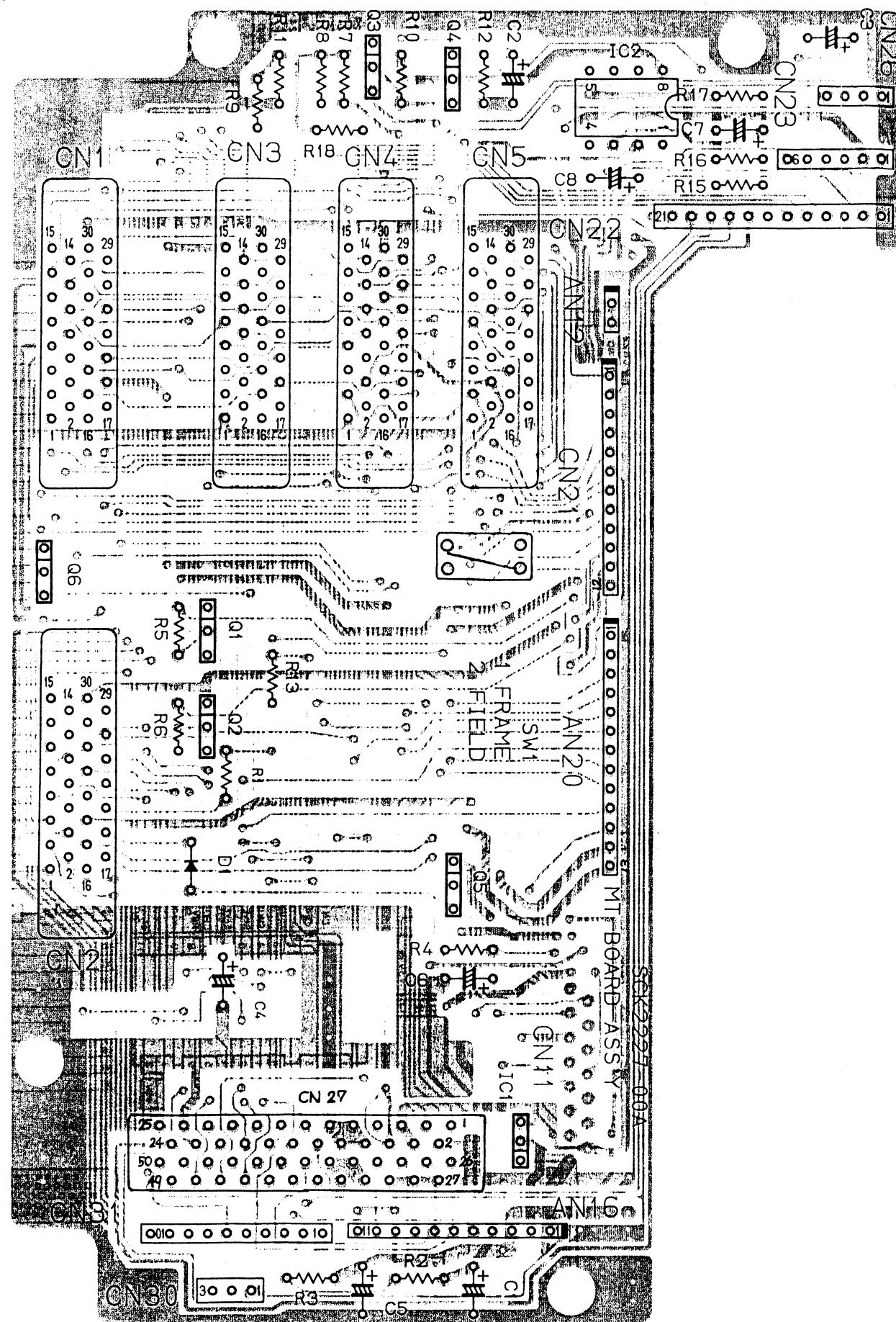
E

F

G

H

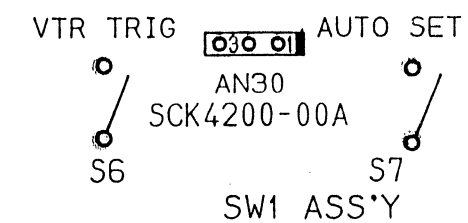
## 6.26 MT CIRCUIT BOARD

MT, SW BOARDS  
(OVERALL)

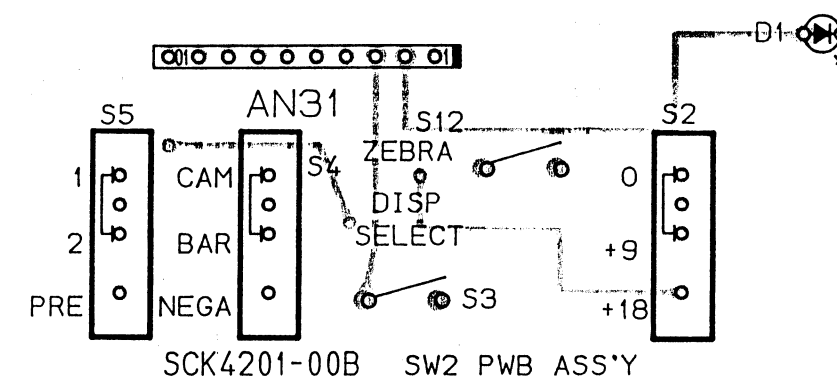
6-27

## 6.27 SW CIRCUIT BOARDS

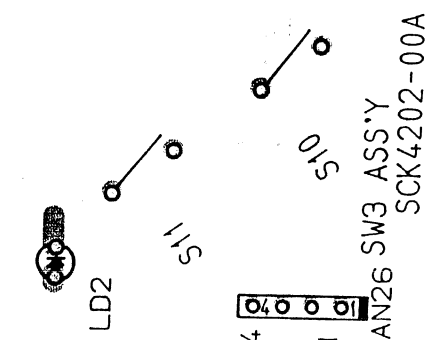
— SW1 board —



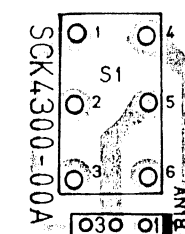
— SW2 board —



— SW3 board —



— SW5 board —

MT, SW BOARDS  
(OVERALL)

6-27

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Parts identified by the  $\triangle$  symbol are critical for safety. Replace only with specified part numbers. For maximum reliability and performance, all other replacement parts should be identical to those specified.

RESISTORS — All resistance values are in ohms ( $\Omega$ ).

CAPACITORS – All capacitance values are in  $\mu F$ , unless otherwise indicated.

P :  $\mu\text{F}$   
C Cap : Ceramic Capacitor  
E Cap : Electrolytic Capacitor  
FM Cap : Film Mica Capacitor  
MY Cap : Mylar Capacitor  
NP Cap : Non-polar Capacitor  
T Cap : Tantalum Capacitor  
TR Cap : Trimmer Capacitor  
MP Cap : Metalized Paper Capacitor







## 7.1 VP board assembly

15

15

Symbol No.	Part No.	Part Name	Description
IC1	TC4053BP	IC	TOSHIBA
IC2	SN75158P	IC	TEXAS
IC3	SN75157P	IC	TEXAS
IC4	TA78L005AP	IC	TOSHIBA
IC5	NJM4556D	IC	JRC
Q1	2SA564(R)	Transistor	MATSUSHITA
Q2	2SA564(R)	Transistor	MATSUSHITA
Q3	2SA564(R)	Transistor	MATSUSHITA
Q4	2SB793(Q.R)	Transistor	MATSUSHITA
D1	HZ9C1L	Zener Diode	HITACHI
D2	MA165TA	Diode	MATSUSHITA
D3	HZ4ALL	Zener Diode	HITACHI
R1	QRD161J-472	CR	4.7 K 1/6 W
R2	QVPB614-501	VR	500 G/Y LEVEL
R3	QRD161J-750	CR	75 1/6 W
R4	QRD161J-472	CR	4.7 K 1/6 W
R5	QVPB614-501	VR	500 R/R-Y/CHROMA LEVEL
R6	QRD161J-750	CR	75 1/6 W
R7	QRD161J-472	CR	4.7 K 1/6 W
R8	QVPB614-501	VR	500 B/B-Y LEVEL
R9	QRD161J-750	CR	75 1/6 W
R10	QRD161J-472	CR	4.7 K 1/6 W
R11	QRD161J-151	CR	150 1/6 W
R12	QRD161J-104	CR	100 K 1/6 W
R13	QRD161J-222	CR	2.2 K 1/6 W
R14	QRD161J-103	CR	10 K 1/6 W
R15	QRD161J-104	CR	100 K 1/6 W
R16	QRD161J-103	CR	10 K 1/6 W
R17	QRD161J-103	CR	10 K 1/6 W
R18	QRD161J-680	CR	68 1/6 W
R19	QRD161J-153	CR	15 K 1/6 W
R20	QRD161J-223	CR	22 K 1/6 W
R21	QRD161J-332	CR	3.3 K 1/6 W
R22	QRD161J-221	CR	220 1/6 W
R23	QRD161J-221	CR	220 1/6 W
R24	QVPB614-102	VR	1 K B-Y LEVEL
R25	QRD161J-152	CR	1.5 K 1/6 W
R26	QVPB614-102	VR	1 K R-Y LEVEL
R27	QRD161J-152	CR	1.5 K 1/6 W
R28	QRD161J-472	CR	4.7 K 1/6 W
C1	QEP40JM-476	E Cap	47 6.3 V
C2	QETA1AM-227	E Cap	220 10 V
C3	QER41HM-105	E Cap	1 50 V
C4	QETA1AM-227	E Cap	220 10 V
C5	QETA1AM-227	E Cap	220 10 V
C6	QER41HM-105	E Cap	1 50 V
C7	QETA1AM-227	E Cap	220 10 V
C8	QETA1AM-227	E Cap	220 10 V
C9	QER41HM-105	E Cap	1 50 V
C10	QETA1AM-227	E Cap	220 10 V
C11	QER41AM-476	E Cap	47 10 V
C12	QER41AM-476	E Cap	47 10 V
C13	QER41AM-476	E Cap	47 10 V
C14	QER41AM-476	E Cap	47 10 V
C15	QER41HM-105	E Cap	1 50 V
C16	QER41EM-106	E Cap	10 25 V

Symbol No.	Part No.	Part Name	Description
C17	QER41EM-106	E Cap	10 25 V
C18	QER41EM-106	E Cap	10 25 V
C19	QER41AM-476	E Cap	10 25 V
C20	QER41HM-105	E Cap	1 50 V
C21	QER41EM-106	E Cap	10 25 V
C22	QER41AM-476	E Cap	47 10 V
C23	QER41EM-106	E Cap	10 25 V
C24	QER40JM-476	E Cap	47 6.3 V
C25	QER40JM-476	E Cap	47 6.3 V
C26	QER40JM-476	E Cap	47 6.3 V
C27	QER41EM-106	E Cap	10 25 V
S1	SCV1335-004	Dip Switch	Y/C, REG, AUTO COMPO
CN34	SCV0501-001	Connector	30 Pin
●CBM1	CBMC4297-00A	VIDEO SW CBM	
IC1	TC4053BF	IC	TOSHIBA
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	2SC2295(B.C)	Transistor	MATSUSHITA
Q3	2SC2295(B.C)	Transistor	MATSUSHITA
Q4	2SC2295(B.C)	Transistor	MATSUSHITA
Q5	2SC2295(B.C)	Transistor	MATSUSHITA
Q6	2SC2295(B.C)	Transistor	MATSUSHITA
D1	MA152WA	Diode	MATSUSHITA
R1	NRSA02J-153	CR	1.5 K 1/10 W
R2	NRSA02J-123	CR	12 K 1/10 W
R3	NRSA02J-101	CR	100 1/10 W
R4	NRSA02J-222	CR	2.2 K 1/10 W
R5	NRSA02J-102	Chip R	1 K 1/10 W
R6	NRSA02J-101	Chip R	100 1/10 W
R7	NRSA02J-101	Chip R	100 1/10 W
R8	NRSA02J-222	Chip R	2.2 K 1/10 W
R9	NRSA02J-102	Chip R	1 K 1/10 W
R10	NRSA02J-101	Chip R	100 1/10 W
R11	NRSA02J-101	Chip R	100 1/10 W
R12	NRSA02J-222	Chip R	2.2 K 1/10 W
R13	NRSA02J-102	Chip R	1 K 1/10 W
R14	NRSA02J-105	Chip R	1 M 1/10 W
R15	NRSA02J-102	CR	1 K 1/10 W
R16	NRSA02J-102	CR	1 K 1/10 W
R17	NRSA02J-102	CR	1 K 1/10 W
C1	NCT03CH-470	C Cap	47 P 50 V
C2	NCT03CH-680	C Cap	68 P 50 V
C3	NCT03CH-470	C Cap	47 P 50 V



Symbol No.	Part No.	Part Name	Description
●CBM2	CBMC4213-00A	VIDEO OUT CBM	
●CBM3	CBMC4213-00A	VIDEO OUT CBM	
●CBM4	CBMC4213-00A	VIDEO OUT CBM	
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	2SC2295(B.C)	Transistor	MATSUSHITA
Q3	2SD602(Q.R)	Transistor	MATSUSHITA
Q4	2SD602(Q.R)	Transistor	MATSUSHITA
D1	HZM6CTR	Zener Diode	HITACHI
R1	NRSA02J-222	Chip R	2.2 K 1/10 W
R2	NRSA02J-152	Chip R	1.5 K 1/10 W
R3	NRSA02J-123	Chip R	12 K 1/10 W
R4	NRSA02J-472	Chip R	4.7 K 1/10 W
R5	NRSA02J-153	Chip R	15 K 1/10 W
R6	NRSA02J-392	Chip R	3.9 K 1/10 W
R7	NRSA02J-392	Chip R	3.9 K 1/10 W
R8	NRSA02J-560	Chip R	56 1/10 W
R9	NRSA02J-560	Chip R	56 1/10 W
R10	NRSA02J-271	Chip R	270 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
●CBM5	CBMC4269-00A	RM CTL CBM	
IC1	TC4S66F	IC	TOSHIBA
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	DTC124K	Transistor	"
Q3	2SC2295(B.C)	Transistor	MATSUSHITA
Q4	2SC2295(B.C)	Transistor	MATSUSHITA
Q5	2SC2295(B.C)	Transistor	MATSUSHITA
D1	MA152A	Diode	MATSUSHITA
D2	MA152A	Diode	MATSUSHITA
R1	NRSA02J-393	Chip R	39 K 1/10 W
R2	-	-	-
R3	-	-	-
R4	NRSA02J-123	Chip R	12 K 1/10 W
R5	NRSA02J-103	Chip R	10 K 1/10 W
R6	NRSA02J-103	Chip R	10 K 1/10 W
R7	NRSA02J-104	Chip R	100 K 1/10 W
R8	NRSA02J-104	Chip R	100 K 1/10 W
R9	-	-	-
R10	-	-	-
R11	NRSA02J-332	Chip R	3.3 K 1/10 W
R12	NRSA02J-332	Chip R	3.3 K 1/10 W
R13	NRSA02J-104	Chip R	100 K 1/10 W

Symbol No.	Part No.	Part Name	Description
R14	NRSA02J-104	Chip R	100 K 1/10 W
R15	NRSA02J-104	Chip R	100 K 1/10 W
R16	NRSA02J-104	Chip R	100 K 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
●CBM6	CBMC4298-00A	SAVE CTL CBM	
IC	TC4053BF	IC	TOSHIBA
Q1	-	-	-
Q2	-	-	-
Q3	-	-	-
Q4	DTC124K	Transistor	ROHM
Q5	DTA124K	Transistor	ROHM
Q6	DTC124K	Transistor	ROHM
R1	-	-	-
R2	-	-	-
R3	-	-	-
R4	-	-	-
R5	NRSA02J-222	Chip R	2.2 K 1/10 W
R6	NRSA02J-223	Chip R	22 K 1/10 W
R7	NRSA02J-104	Chip R	100 K 1/10 W
R8	NRSA02J-104	Chip R	100 K 1/10 W
●CBM8	CBMC4304-00A	VIDEO AMP/DET CBM	
Q1	2SA1022(B.C)	Transistor	MATSUSHITA
Q2	2SC2295(B.C)	Transistor	MATSUSHITA
Q3	2SC2406(B.C)	Transistor	MATSUSHITA
Q4	DTC124K	Transistor	ROHM
D1	MA152A	Diode	MATSUSHITA
R1	NRSA02J-393	CR	39 K 1/10 W
R2	NRSA02J-123	CR	12 K 1/10 W
R3	NRSA02J-822	CR	8.2 K 1/10 W
R4	NRSA02J-822	CR	8.2 K 1/10 W
R5	NRSA02J-104	CR	100 K 1/10 W
R6	NRSA02J-562	CR	5.6 K 1/10 W
R7	NRSA02J-122	CR	1.2 K 1/10 W

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## 7.2 GL board assembly. 16

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Symbol No.	Part No.	Part Name	Description
●CBM9	CBMC4311-00A	SID GENE CBM	
IC1	TC40H166F	IC	TOSHIBA
IC2	TC4020BF	IC	TOSHIBA
IC3	TC40H000F	IC	TOSHIBA
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	DTC124K	Transistor	ROHM
Q3	DTC124K	Transistor	ROHM
Q4	DTC124K	Transistor	ROHM
D1	MA152A	Diode	MATSUSHITA
R1	NRSA02J-224	Chip R	220 K 1/10 W
R2	NRSA02J-104	Chip R	100 K 1/10 W
R3	NRSA02J-103	Chip R	10 K 1/10 W
R4	NRSA02J-223	Chip R	22 K 1/10 W
R5	NRSA02J-223	Chip R	22 K 1/10 W
R6	NRSA02J-223	Chip R	22 K 1/10 W
R7	NRSA02J-223	Chip R	22 K 1/10 W
R8	NRSA02J-332	Chip R	3.3 K 1/10 W
R9	NRSA02J-103	Chip R	10 K 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
C2	NCF21HJ-102	C Cap	0.001 50 V

Symbol No.	Part No.	Part Name	Description
IC1	TC4053BP	IC	TOSHIBA
IC2	TC4528BP	IC	TOSHIBA
IC3	TC4528BP	IC	TOSHIBA
IC4	TC4528BP	IC	TOSHIBA
IC5	HD14046BP	IC	HITACHI
IC7	HA11247	IC	HITACHI
Q1	2SA564(R)	Transistor	MATSUSHITA
Q2	2SC1685(R.S)	Transistor	MATSUSHITA
Q3	2SA777(R)	Transistor	MATSUSHITA
Q4	2SA564(R)	Transistor	MATSUSHITA
Q5	2SA564(R)	Transistor	MATSUSHITA
Q6	2SC1685(R.S)	Transistor	MATSUSHITA
Q7	2SA719R	Transistor	MATSUSHITA
Q8	DTC124ES	Transistor	ROHM
D1	MA165	Diode	MATSUSHITA
D2	HZ4ALL	Zener Diode	HITACHI
D3	MA165	Diode	MATSUSHITA
D4	MA165	Diode	MATSUSHITA
D5	MA165	Diode	MATSUSHITA
D6	HZ6(2C)L	Zener Diode	HITACHI
D7	MA165	Diode	MATSUSHITA
R1	QRD161J-472	CR	4.7 K 1/6 W
R2	QRD161J-223	CR	22 K 1/6 W
R3	QRD161J-223	CR	22 K 1/6 W
R4	QRD161J-103	CR	10 K 1/6 W
R5	QRD161J-333	CR	33 K 1/6 W
R6	QRD161J-822	CR	8.2 K 1/6 W
R7	QRD161J-222	CR	2.2 K 1/6 W
R8	QRD161J-562	CR	5.6 K 1/6 W
R9	QRD161J-681	CR	680 1/6 W
R10	QRD161J-182	CR	1.8 K 1/6 W
R11	QRD161J-153	CR	15 K 1/6 W
R12	QRD161J-563	CR	56 K 1/6 W
R13	QRD161J-273	CR	27 K 1/6 W
R14	QRD161J-103	CR	10 K 1/6 W
R15	QRD161J-681	CR	680 1/6 W
R16	QRV141F-2201	MFR	2.2 K 1/4 W
R17	QRD161J-103	CR	10 K 1/6 W
R18	QRD161J-102	CR	1 K 1/6 W
R19	QRD161J-105	CR	1 M 1/6 W
R20	QRD161J-332	CR	3.3 K 1/6 W
R21	QRD161J-332	CR	3.3 K 1/6 W
R22	QRD161J-563	CR	56 K 1/6 W
R23	QRD161J-273	CR	27 K 1/6 W
R24	QVPB614-503	VR	50 K BJ RST TIMING
R25	QRV141F-6802	MFR	68 K 1/4 W
R26	QRV141F-8202	MFR	82 K 1/4 W
R27	QRV141F-6802	MFR	68 K 1/4 W
R28	QRD161J-472	CR	4.7 K 1/6 W
R29	QVPB614-501	VR	500 S LOCK
R30	QRD161J-562	CR	5.6 K 1/6 W
R31	QRD161J-821	CR	820 1/6 W
R32	QRD161J-391	CR	390 1/6 W
R33	QRD161J-152	CR	1.5 K 1/6 W



Symbol No.	Part No.	Part Name	Description
R34	QRD161J-271	CR	270 1/6 W
R35	QRD161J-472	CR	4.7 K 1/6 W
R36	QRD161J-472	CR	4.7 K 1/6 W
R37	QRD161J-123	CR	12 K 1/6 W
R38	QRD161J-103	CR	10 K 1/6 W
R39	QRD161J-221	CR	220 1/6 W (U ver.)
	QRD161J-102	CR	1 K 1/6 W (E ver.)
R40	QRD161J-563	CR	56 K 1/6 W
R41	QRD161J-103	CR	10 K 1/6 W
R42	QRD161J-103	CR	10 K 1/6 W
R43	QRD161J-103	CR	10 K 1/6 W
R44	QRD161J-100	CR	10 1/6 W
R45	QRD161J-221	CR	220 1/6 W
R46	QRD161J-103	CR	10 K 1/6 W
R47	QRD161J-103	CR	10 K 1/6 W
R48	QRD161J-334	CR	330 K 1/6 W
R49	QRD161J-100	CR	10 1/6 W
C1	QER41EM-106	E Cap	10 25 V
C2	QER41AM-476	E Cap	47 6.3 V
C3	QEP41HM-105	E Cap	1 50 V
C4	QER41AM-476	E Cap	47 6.3 V
C5	QFN31HJ-103	C Cap	0.01 50 V
C6	QCT25UJ-220	C Cap	22 P
C7	QFN41HJ-103	MY Cap	0.01 50 V
C8	QCT25UJ-151	C Cap	150 P
C9	QFN41HJ-103	MY Cap	0.01 50 V
C10	QER41AM-476	E Cap	47 10 V
C11	QETA1AM-227	E Cap	220 10 V
C12	QETA1AM-227	E Cap	220 10 V
C13	QFN41HJ-102	MY Cap	0.001 50 V
C14	QEP41CM-106	E Cap	10 16 V
C15	QEP40JM-476	E Cap	47 6.3 V
C16	QER41AM-476	E Cap	47 10 V
C17	QCT25CH-181	C Cap	180 P
C18	QCT25CH-470	C Cap	47
C19	QCT25CH-220	C Cap	22 P
C20	QCT25CH-560	C Cap	56 P
C21	QJ41AM-475	E Cap	4.7 10 V
C22	QFN41HJ-333	MY Cap	0.033 50 V
C23	QCT25CH-101	C Cap	100 P (E ver. only)
C24	QJ41AM-106	E Cap	10 10 V
C25	QER41EM-106	E Cap	10 50 V
C26	QJ41AM-106	E Cap	10 10 V
C27	QJ41AM-106	E Cap	10 10 V
C28	QFN41HJ-333	MY Cap	0.033 50 V (U ver.)
	QJ41VM-224	T Cap	0.22 35 V (E ver.)
C29	QFN41HJ-103	MY Cap	0.01 50 V
C30	QCT25UJ-101	C Cap	100 P
C31	QCT25UJ-101	C Cap	100 P
C32	QER41HM-105	E Cap	1 50 V
C33	QCT25UJ-101	C Cap	100 P
C34	QEP41HM-105	E Cap	1 50 V
C35	QER41EM-106	E Cap	10 25 V
C36	QEP41CM-106	E Cap	10 16 V
C37	QJ41AM-106	E Cap	10 10 V
C38	QER41AM-476	E Cap	47 10 V
C39	QEP41CM-106	E Cap	10 16 V
C40	QER40JM-107	E Cap	100 6.3 V
C41	QEP40JM-476	E Cap	47 6.3 V

Symbol No.	Part No.	Part Name	Description
C42	QER41EM-106	E Cap	10 25 V
C43	QFN41HJ-222	MY Cap	2200 P 50 V
L1	SCV0331-390	Paeking Coil	39 $\mu$ H
L2	SCV0331-220	Paeking Coil	22 $\mu$ H
L3	SCV0331-120	Paeking Coil	12 $\mu$ H
L4	SCV0331-220	Paeking Coil	22 $\mu$ H
T1	SCV0514-001	Trans	MIC Trans
CN35	SCV0501-001	Connector	30 Pin
●CBM1	CBMC4211-00A	SYNC SEP CBM	
Q1	2SC1022(B.C)	Transistor	MATSUSHITA
Q2	2SC1022(B.C)	Transistor	MATSUSHITA
Q3	2SC2295(B.C)	Transistor	MATSUSHITA
Q4	2SC2295(B.C)	Transistor	MATSUSHITA
Q5	2SC2295(B.C)	Transistor	MATSUSHITA
Q6	2SC2295(B.C)	Transistor	MATSUSHITA
Q7	2SC1022(B.C)	Transistor	MATSUSHITA
R1	NRSA02J-103	Chip R	10 K 1/10 W
R2	NRSA02J-393	Chip R	39 K 1/10 W
R3	NRSA02J-102	Chip R	1 K 1/10 W
R4	NRSA02J-271	Chip R	270 1/10 W
R5	NRSA02J-560	Chip R	56 1/10 W
R6	NRSA02J-561	Chip R	56 1/10 W
R7	NRSA02J-332	Chip R	3.3 K 1/10 W
R8	NRSA02J-102	Chip R	1 K 1/10 W
R9	NRSA02J-563	Chip R	56 K 1/10 W
R10	NRSA02J-273	Chip R	27 K 1/10 W
R11	NRSA02J-152	Chip R	1.5 K 1/10 W
R12	NRSA02J-100	Chip R	10 1/10 W
R13	NRSA02J-562	Chip R	5.6 K 1/10 W
R14	NRSA02J-682	Chip R	6.8 K 1/10 W
R15	NRSA02J-392	Chip R	3.9 K 1/10 W
R16	NRSA02J-392	Chip R	3.9 K 1/10 W
R17	NRSA02J-472	Chip R	4.7 K 1/10 W
R18	NRSA02J-562	Chip R	5.6 K 1/10 W
R19	NRSA02J-332	Chip R	3.3 K 1/10 W
R20	NRSA02J-332	Chip R	3.3 K 1/10 W
C3	NCT03CH-150	C Cap	15 P 50 V
C5	NCB21HK-272	C Cap	0.0027 50 V
C6	NCT03CH-561	C Cap	560 P 50 V
C7	NCF21EZ-104	C Cap	0.1 25 V
●CBM2	CBMB4212-00A	ERROR AMP CBM	
IC1	NJM4558M	IC	JRC
IC2	NJM4558M	IC	JRC



## 7.3 CT board assembly 17

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Symbol No.	Part No.	Part Name	Description
D1	MA152A	Diode	MATSUSHITA
R1	NRSA02J-332	Chip R	3.3 K 1/10 W
R2	NRSA02J-682	Chip R	6.8 K 1/10 W
R3	NRSA02J-562	Chip R	5.6 K 1/10 W
R4	NRSA02J-224	Chip R	220 K 1/10 W
R5	NRSA02J-223	Chip R	22 K 1/10 W
R6	NRSA02J-104	Chip R	100 K 1/10 W
R7	NRSA02J-473	Chip R	47 K 1/10 W
R8	NRSA02J-473	Chip R	47 K 1/10 W
R9	NRSA02J-561	Chip R	560 1/10 W
R10	NRSA02J-273	Chip R	27 K 1/10 W
R11	NRSA02J-273	Chip R	27 K 1/10 W
R12	NRSA02J-333	Chip R	33 K 1/10 W
R13	NRSA02J-102	Chip R	1 K 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
•CBM3	CBMC4305-00A	MIC AMP CBM	
IC1	NJM4558M	IC	JRC
IC2	NJM4558M	IC	JRC
R1	NRSA02J-104	Chip R	100 K 1/10 W
R2	NRSA02J-104	Chip R	100 K 1/10 W
R3	NRSA02J-104	Chip R	100 K 1/10 W
R4	NRSA02J-104	Chip R	100 K 1/10 W
R5	NRSA02J-104	Chip R	100 K 1/10 W
R6	NRSA02J-104	Chip R	100 K 1/10 W
R7	NRSA02J-333	Chip R	33 K 1/10 W
R8	NRSA02J-104	Chip R	100 K 1/10 W
C1	NCT03CH-560	C Cap	56 P 50 V
C2	NCT03CH-560	C Cap	56 P 50 V

Symbol No.	Part No.	Part Name	Description
R1	QVPB613-203	VR	20 K H PHNSE
R2	QRD161J-472	CR	4.7 K 1/6 W
R3	QVD161J-472	CR	4.7 K 1/6 W
R4	QVD161J-820	CR	820 1/6 W
R5	QVPB613-202	VR	2 K SC FINE
R6	QRD161J-104	CR	100 K 1/6 W
R7	QRD161J-104	CR	100 K 1/6 W
R8	QRD161J-154	CR	150 K 1/6 W
S1	SCV0389-011	Slide Switch	SC COARSE
S2	SCV0389-011	Slide Switch	VTR
S3	SCV1346-011	Slide Switch	MODE
S4	SCV0490-011	Slide Switch	AUDIO LEVEL
CN44	SCV1266-020	Connector	20 Pin
•CBM5	CBMC4214-00A	SC PHASE CBM	
Q1	2SC2406(S. T)	Transistor	MATSUSHITA
Q2	2SC2406(S. T)	Transistor	MATSUSHITA
Q3	2SC2406(S. T)	Transistor	MATSUSHITA
Q4	2SA1022(B. C)	Transistor	MATSUSHITA
R1	NRSA02J-102	Chip R	1 K 1/10 W
R2	NRSA02J-102	Chip R	1 K 1/10 W
R3	NRSA02J-561	Chip R	560 1/10 W
R4	NRSA02J-821	Chip R	820 1/10 W
R5	NRSA02J-821	Chip R	820 1/10 W
R6	NRSA02J-561	Chip R	560 1/10 W
R7	NRSA02J-681	Chip R	680 1/10 W
R8	NRSA02J-681	Chip R	680 1/10 W
R9	NRSA02J-562	Chip R	5.6 K 1/10 W
C1	NCT03CH-101	C Cap	100 P 50 V
C2	NCT03CH-101	C Cap	100 P 50 V
C3	NCT03CH-560	C Cap	56 P 50 V
C4	NCF21HZ-103	C Cap	0.01 50 V
C5	NCF21HZ-103	C Cap	0.01 50 V

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## 7.4 MT2 board assembly 18

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Symbol No.	Part No.	Part Name	Description
R1	QRD161J-750	CR	75 1/6 W
R2	QRD161J-750	CR	75 1/6 W
C1	QEPA1CM-106	E Cap	10 16 V
C2	NCT03CH-101	CR	100 P
C3	QETC1CM-108	E Cap	1000 16 V
CN34	SCV0500-001	Connector	30 Pin VP board
CN35	SCV0500-001	Connector	30 Pin GL board
CN36	SCV1251-40S	Connector	40 Pin
CN38	SCV1265-028	Connector	28 Pin
CN39	SCV1227-003	Connector	3 Pin VR board
CN40	SCV1227-004	Connector	4 Pin INT board
CN41	SCV1228-002	Connector	2 Pin ER board
CN42	SCV1228-002	Connector	2 Pin
CN43	SCV1227-003	Connector	3 Pin CN 2 board
CN44	SCV1265-020	Connector	20 Pin CT board
CN45	SCV1227-005	Connector	5 Pin CN 4 board
△ F1	Perfer to Section 2.1		
	SCV1271-001	Fuse Holder	
LC1	DST306-92B271M	Filter	
S1	SCV1080-003 SCV1392-001	Socket Short Pin	PB AUDIO/AUDIO 2

## 7.5 INT board assembly 19

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Symbol No.	Part No.	Part Name	Description
R2	QRD161J-102	CR	1 K 1/6 W
J8	Refer Section 5.2.1 (14)		INCOM JACK



## 7.11 CP board assembly

Symbol No.	Part No.	Part Name	Description
IC1	MB89T715PF	IC	FUJITSU
IC2	PLSC1027-V1-00	IC	ROM(MTSC)
IC3	PLSC1028-V1-00	IC	ROM(PAL)
IC4	TC74HC373F	IC	TOSHIBA
IC5	TC74HC165AF	IC	TOSHIBA
IC6	TC74HC165AF	IC	TOSHIBA
IC7	MB88342PF	IC	FUJITSU
IC8	M50452-003P	IC	MITSUBISHI
IC9	MB8909P-6-106	IC	FUJITSU
IC10	S2445101	IC	SEIKO
IC11	TC40H004F	IC	TOSHIBA
IC12	TC50H001F	IC	TOSHIBA
IC13	TA78L005AP	IC	TOSHIBA
IC14	PS1529C-2	IC	MITSUMI
IC15	NJM2902M	IC	JRC
IC16	NJM2902M	IC	JRC
IC17	LM2904M	IC	TEXAS
IC18	TC7500FTE85L	IC	TOSHIBA
Q1	DTC124K	TRANSISTOR	ROHM
Q2	DTC124K	TRANSISTOR	ROHM
Q3	DTC124K	TRANSISTOR	ROHM
Q4	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q5	DTC124K	TRANSISTOR	ROHM
Q6	DTC124K	TRANSISTOR	ROHM
Q7	DTC124K	TRANSISTOR	ROHM
Q8	DTC124K	TRANSISTOR	ROHM
Q9	DTC124K	TRANSISTOR	ROHM
Q10	DTC124K	TRANSISTOR	ROHM
D1	MA152WK	DIODE	MATSUSHITA
D2	MA152WK	DIODE	MATSUSHITA
D3	MA152WA	DIODE	MATSUSHITA
D4	MA152WA	DIODE	MATSUSHITA
D5	MA152A	DIODE	MATSUSHITA
D6	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-334	MGR	330K 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-223	MGR	22K 1/10W
R6	NRSA02J-223	MGR	22K 1/10W
R7	NRSA02J-223	MGR	22K 1/10W
R8	NRSA02J-122	MGR	1.2K 1/10W
R9	NRSA02J-222	MGR	2.2K 1/10W
R10	NRSA02J-223	MGR	22K 1/10W
R11	NRSA02J-103	MGR	10K 1/10W
R12	NRSA02J-103	MGR	10K 1/10W
R13	NRSA02J-103	MGR	10K 1/10W
R14	NRSA02J-101	MGR	100 1/10W
R15	NRSA02J-101	MGR	100 1/10W
R16	NRSA02J-102	MGR	1.0K 1/10W
R17	QVPB614-203	VR	20K B BLK
R18	QVPB614-203	VR	20K B WHT
R19	NRSA02J-103	MGR	10K 1/10W
R20	NRSA02J-473	MGR	47K 1/10W
R21	NRSA02J-472	MGR	4.7K 1/10W
R22	NRSA02J-473	MGR	47K 1/10W
R23	QVPB614-203	VR	20K R BLK
R24	QVPB614-203	VR	20K R WHT
R25	NRSA02J-103	MGR	10K 1/10W
R26	NRSA02J-473	MGR	47K 1/10W
R27	QVPB614-102	VR	1.0K IRIS LEVEL
R28	NRSA02J-182	MGR	1.8K 1/10W
R29	NRSA02J-103	MGR	10K 1/10W
R30	QVPB614-203	VR	20K MASTER BLACK
R31	NRSA02J-393	MGR	39K 1/10W
R32	NRSA02J-332	MGR	3.3K 1/10W
R33	QVPB614-202	VR	2.0K 12V DET
R34	NRSA02J-103	MGR	10K 1/10W
R35	NRSA02J-223	MGR	22K 1/10W
R36	NRSA02J-223	MGR	22K 1/10W
R37	NRSA02J-223	MGR	22K 1/10W
R38	NRSA02J-223	MGR	22K 1/10W
R39	NRSA02J-223	MGR	22K 1/10W
R40	NRSA02J-223	MGR	22K 1/10W
R41	NRSA02J-103	MGR	10K 1/10W
R42	NRSA02J-272	MGR	2.7K 1/10W
R43	NRSA02J-104	MGR	100K 1/10W
R44	NRSA02J-104	MGR	100K 1/10W
R45	NRSA02J-223	MGR	22K 1/10W
R46	NRSA02J-223	MGR	22K 1/10W
R47	NRSA02J-223	MGR	22K 1/10W
R48	NRSA02J-472	MGR	4.7K 1/10W
R49	NRSA02J-103	MGR	10K 1/10W
R50	NRSA02J-103	MGR	10K 1/10W
R51	NRSA02J-104	MGR	100K 1/10W
R52	NRSA02J-103	MGR	10K 1/10W
R53	NRSA02J-103	MGR	10K 1/10W
R54	NRSA02J-223	MGR	22K 1/10W
R55	NRSA02J-103	MGR	10K 1/10W

Symbol No.	Part No.	Part Name	Description
RA1	QR8081K-223	R.NETWORK	22K X8
RA2	QR8081K-223	R.NETWORK	22K X8
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NCF21EZ-104	C CAP	0.10 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCT03CH-221	C CAP	220P 50V
C5	NCF21EZ-104	C CAP	0.10 25V
C6	NCT03CH-151	C CAP	150P 50V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	NCT03CH-330	C CAP	33P 50V
C9	NCT03CH-220	C CAP	22P 50V
C10	NCT03CH-220	C CAP	22P 50V
C11	QER41HM-105	E CAP	1.0 50V
C12	QER41HM-475	E CAP	4.7 50V
C13	QER41HM-475	E CAP	4.7 50V
C14	NCF21HZ-103	C CAP	0.010 50V
C15	NCF21HZ-103	C CAP	0.010 50V
C16	NCF21EZ-104	C CAP	0.10 25V
C17	QER41EM-106	E CAP	10 25V
C18	QER41EM-106	E CAP	10 25V
C19	NCT03CH-220	C CAP	22P 50V
C20	NCT03CH-220	C CAP	22P 50V
C21	NCF21EZ-104	C CAP	0.10 25V
C22	QER41HM-475	E CAP	4.7 50V
C23	QER41EM-106	E CAP	10 25V
C24	QER41AM-476	E CAP	47 10V
C25	NCF21HZ-103	C CAP	0.010 50V
C26	QER41AM-476	E CAP	47 10V
C27	QER41AM-476	E CAP	47 10V
C28	QER41AM-476	E CAP	47 10V
C29	NCF21EZ-104	C CAP	0.10 25V
C30	NCF21EZ-104	C CAP	0.10 25V
C31	NCF21EZ-104	C CAP	0.10 25V
C32	NCF21HZ-103	C CAP	1000P 50V
C33	NCF21HZ-103	C CAP	1000P 50V
L1	SMV2223	PEAKING COIL	10u
L2	SMV2223	PEAKING COIL	10u
L3	SMV2223	PEAKING COIL	10u
X1	SCV1492-001	CRYSTAL	7.3728MHZ
S1	SCV1311-001	ROTARY SWITCH	PIX SEL
S2	SCV1335-002	DIP SWITCH	CHECK SW
CN1	SCV0501-001	CONNECTOR	BLK/WHT ADJ
CN2	SCV0501-001	CONNECTOR	30PIN

Symbol No.	Part No.	Part Name	Description
• CBM1	CBMC4226-00A	AW/AB DET 1 CMB	
• CBM2	CBMC4226-00A	AW/AB DET 1 CBM	
• CBM3	CBMC4226-00A	AW/AB DET 1 CBM	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SK198(Q.R)	FET	HITACHI
Q6	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-102	MGR	1.0K 1/10W
R2	NRSA02J-152	MGR	1.5K 1/10W
R3	NRSA02J-331	MGR	330 1/10W
R4	NRSA02J-474	MGR	470K 1/10W
R5	NRSA02J-104	MGR	100K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-174	MGR	470K 1/10W
R8	NRSA02J-104	MGR	100K 1/10W
R9	NRSA02J-154	MGR	150K 1/10W
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-474	MGR	470K 1/10W
R12	NRSA02J-104	MGR	100K 1/10W
C1	NCT03CH-680	C CAP	68P 50V
C2	NCF21EZ-104	C CAP	0.10 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCF21EZ-104	C CAP	0.10 25V
SCV1210-006		PIN CONNECTOR	CLIP LEAD
SCV1210-006		PIN CONNECTOR	CLIP LEAD
• CBM5	CBMC4306-00A	AW/AB DET 2 CBM	
IC1	LM2904M	IC	NATIONAL SEMICONDUCTOR
IC2	LM2904M	IC	NATIONAL SEMICONDUCTOR
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
R1	NRSA02J-103	MGR	10K 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-103	MGR	10K 1/10W
R6	NRSA02J-103	MGR	10K 1/10W
R7	NRSA02J-474	MGR	470K 1/10W
R8	NRSA02J-104	MGR	100K 1/10W
R9	NRSA02J-333	MGR	33K 1/10W
R10	NRSA02J-472	MGR	4.7K 1/10W
R11	NRSA02J-474	MGR	470K 1/10W
R12	NRSA02J-104	MGR	100K 1/10W
R13	NRSA02J-333	MGR	33K 1/10W
R14	NRSA02J-103	MGR	10K 1/10W
R15	NRSA02J-474	MGR	470K 1/10W
R16	NRSA02J-104	MGR	100K 1/10W
R17	NRSA02J-333	MGR	33K 1/10W
R18	NRSA02J-472	MGR	4.7K 1/10W
R19	NRSA02J-333	MGR	33K 1/10W
R20	NRSA02J-123	MGR	12K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
SCV1210-012		PIN CONNECTOR	CLIP LEAD

Symbol No.	Part No.	Part Name	Description
• CBM4	CBMC4303-00A	NAM DET CBM	
IC1	LM2904M	IC	NATIONAL SEMICONDUCTOR
Q2	DTC124K	TRANSISTOR	ROHM
D1	MA152A	DIODE	MATSUSHITA
D2	MA152A	DIODE	MATSUSHITA
D3	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-183	MGR	18K 1/10W
R4	NRSA02J-153	MGR	15K 1/10W
R5	NRSA02J-103	MGR	10K 1/10W
R6	NRSA02J-822	MGR	8.2K 1/10W
R7	NRSA02J-562	MGR	5.6K 1/10W
R8	NRSA02J-333	MGR	33K 1/10W
R9	NRSA02J-153	MGR	15K 1/10W
R10	NRSA02J-183	MGR	18K 1/10W
R11	NRSA02J-473	MGR	47K 1/10W
R12	NRSA02J-100	MGR	10 1/10W
R13	NRSA02J-223	MGR	22K 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-154	MGR	150K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
SCV1210-006		PIN CONNECTOR	CLIP LEAD







No. 60017-1

# **JVC** Service Manual

## **Supplement**

3-CCD COLOR VIDEO CAMERA

3-CCD-FARBVIDEO KAMERA

CAMERA VIDEO COULEUR A TROIS CCD

**MODEL**  
**MODELL**  
**MODÈLE**

**KY-17/KY-R17**  
(with KA-20)

**VICTOR COMPANY OF JAPAN, LIMITED**



**Manual Change Information**  
**For Service Manual No. 60017**  
**Model KY-17 and KY-R17**

This edition, a supplement to the headlined service manual, refers only to the component which has been altered in production of this series.

(Alteration of this time: "CP board" which has been redesigned with the change of the CPU's device IC.)

Hence, your manual requires updating with new changes and information such as in the following pages.

This change affects KY-17U serial No. 17450381 and after (NTSC Version)

This change affects KY-17E serial No. 17450537 and after (PAL Version)

